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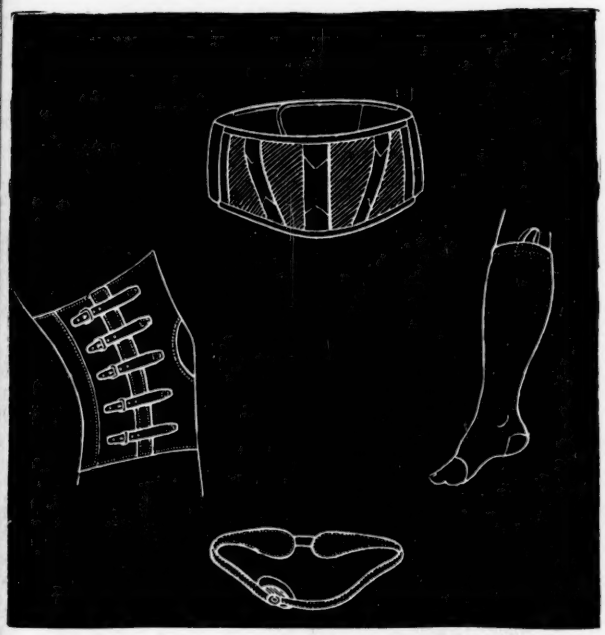

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The Massachusetts Medical Society

The next Annual Meeting of the Massachusetts Medical Society will be held in Worcester, at the Hotel Bancroft, Monday, Tuesday and Wednesday, June 4-5-6, 1934.

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TYPE I PNEUMOCOCCIC INFECTIONS WITH ESPECIAL REFERENCE TO SPECIFIC SERUM TREATMENT*

BY W. D. SUTLIFF, M.D.,† AND MAXWELL FINLAND, M.D.†

THE object of this paper is the brief presentation of data accumulated in three years' experience with the specific therapy of Type I lobar pneumonia with concentrated type-specific antibody prepared by the method of Felton. A number of reports of cases treated with such antibody appeared shortly after its development, all of which were similar in the favorable impression they conveyed[1, 2, 3, 4]. It seems wise to examine the subsequent experience to judge whether the procedure is living up to its original promise.

Three aspects will be considered: (1) The relation which the number of cases of Type I pneumococcic lobar pneumonia seen early in the disease bears to the total number of cases of pneumonia and of pneumococcic infections which were encountered. This will give a fair indication of the frequency with which one may have occasion to use this therapeutic agent in actual practice. (2) The clinical characteristics of Type I pneumococcic infections, and particularly of pneumonia due to this organism. Early diagnosis, an important prerequisite in the choice of patients for serum treatment, depends, in turn, upon an acquaintance with such clinical characteristics. (3) The effects of serum therapy upon the clinical course and the death rate of Type I pneumococcic pneumonia.

PROPORTION OF PATIENTS SUITABLE FOR SERUM THERAPY

The relationship of Type I antipneumococcic serum therapy to the pneumonia problem as a whole may be roughly represented by the 1561 hospital cases summarized in table 1. This group represents all of the patients admitted to the Medical Services of the Boston City Hospital between September, 1929 and May, 1932 who were diagnosed or were suspected of having pneumonia and from whom material was obtained for bacteriological study. It includes, in addition, a number of surgical cases in which pulmonary complications were suspected, and all other patients from whom pneumococci were obtained in the routine bacteriological laboratory. The material from all of these cases was studied especially for the presence of pneumococci of the various serological types. Only 151 of these patients with Type I pneumococcic lobar pneumonia were admitted to the hospital, less than 96 hours after the onset of their illness, and could thus be considered as suitable for serum therapy. These 151 cases represent, therefore, approximately one-tenth of the total number of cases investigated bacteriologically, about one-fifth of all the cases of lobar pneumonia and about three-fifths of the cases of Type I pneumococcic lobar pneumonia. In view of the lack of more direct data, it is justifiable to consider that these proportions probably hold in the community at large.

TABLE 1

PROPORTION OF PATIENTS SUITABLE FOR TYPE I ANTIPNEUMOCOCCIC THERAPY

	Number of Cases
Patients bacteriologically investigated	1561
Patients harboring pneumococci of all types	1094
Patients with lobar pneumonia	770
Patients harboring Type I pneumococci	318
Adults with Type I lobar pneumonia	240
Adults with Type I lobar pneumonia admitted less than 96 hours after onset of the disease	151

The nature of the cases from which Type I pneumococci were obtained but which are not included among the 239 adults with lobar pneumonia is given in table 2.

It will be noted in the table that in five patients, Type I pneumococci were recovered from the sputum but probably had no relation to the disease. These were patients with pulmonary tuberculosis or tuberculous pleurisy with effusion who were probably transient carriers of these organisms. This incidence of carriers, namely, five among 1561, or approximately 0.3 per cent, corresponds to the usual percentage of carriers of Type I pneumococci found in epidemiological investigations among the population at large.

*From the Thorndike Memorial Laboratory, Second and Fourth Medical Services (Harvard), Boston City Hospital and the Department of Medicine, Harvard Medical School.

This study was aided, in part, by a grant from the William W. Wellington Fund of the Harvard Medical School and, in part, by a grant given in memory of Francis W. Peabody by the Ella Sachs Plotz Foundation.

The authors acknowledge gratefully the assistance of the following persons in carrying out this work: Drs. J. G. Kelley, J. M. Bethea, T. N. Hunnicutt, J. W. Parsons, J. J. Stanford, C. W. Steele, and C. E. Welch, and Mrs. Mary Truesdale, Miss Beatrice Tyndall, and Miss Mary Carroll.

†Sutliff — Instructor in Medicine, University of Chicago. Finland — Assistant Physician, Thorndike Memorial Laboratory, Boston City Hospital. For records and addresses of authors see "This Week's Issue," page 276.

CLINICAL CHARACTERISTICS OF TYPE I PNEUMONIA

Character of the pulmonary lesion: Pneumonia produced by Type I pneumococci, like that due to Type II pneumococci and unlike that of other pneumococcic types[5], is nearly always of the typical lobar variety. In only five of the 273 cases of pneumonia was the pathological process that of patchy consolidation or bronchopneumonia. Two of these five patients were, respectively, 50 and 62 years of age, and the other three were infants. The patchy nature of the consolidation was confirmed at postmortem in all. These five cases are worthy of special note because it has been thought that the Type I pneumococcus did not produce bronchopneumonia. It is of considerable interest in view of the age variations in blood immune bodies and mortality rates that these atypical cases appear exclusively at the extremes of life[6].

TABLE 2

PATIENTS HARBORING TYPE I PNEUMOCOCCI OTHER THAN ADULTS WITH LOBAR PNEUMONIA

	Number of Cases
Less than 12 years of age Lobar Pneumonias and Empyemas	50
Bronchopneumonia (3 infants, 2 aged adults)	5
Adults with empyema	10
Pneumococcic infections in adults other than in lungs and pleura Otitis media—1 Meningitis—1 Osteomyelitis—1 Infected hemothorax—1 Infected abortion—2 Chronic salpingitis—1 Peritonitis—1	8
No apparent pneumococcic infection	5
	78

Primary and secondary pneumonia: Lobar pneumonia was the primary disease in 225 or 96 per cent of the 239 cases. Bronchopneumonia, on the contrary, was secondary to other conditions in all but one of the five cases. A list of the primary diseases, where pneumonia was secondary, is given in table 3. Lobar pneumonia, in a number of instances, was secondary to operations on the nose or throat suggesting that a direct infection took place. In these cases there was a sudden onset within a few hours after either the operative procedure or the normal delivery. The preponderance of secondary pneumonia among the cases with bronchial consolidation has been noted in infections due to other pneumococcic strains[5].

Symptomatology: Symptoms characteristic of clinical lobar pneumonia were noted with the frequency to be expected, indicating that they are a valuable guide in selecting patients for bacteriological study and treatment. The most frequent symptoms were (1) sudden onset, (2) chill, (3) pleuritic pain and (4) bloody sputum. These occurred, respectively, in 94, 79, 79 and 75 per cent of all cases in which reliable data were available. Sixty per cent of the 131 recovered cases terminated by crisis. A history of acute upper respiratory tract infection preceding the onset of the pneumonia was obtained in 59 per cent of the patients, showing that this history is of little value in distinguishing Type I lobar pneumonia from pneumonias due to other types.

TABLE 3

PRIMARY DISEASES IN SECONDARY PNEUMONIA

		Number of Cases
LOBAR PNEUMONIA		
Staphylococcic pyemia	1	
Total acute infections		1
Incision of peritonsillar abscess	1	
Extraction of teeth	2	
Tonsillectomy and adenoidectomy	1	
Paracentesis of otitis media	1	
Normal deliveries	3	
Total operative procedures and normal deliveries		8
Cardiac decompensation	2	
Arteriosclerotic heart disease and uremia	1	
Senility, arteriosclerosis, chronic nephritis	1	
Chronic nephritis and uremia	1	
Total systemic diseases		5
TOTAL SECONDARY LOBAR PNEUMONIAS		14
BRONCHOPNEUMONIA		
Pertussis	2	
Total acute infections		2
Subarachnoid hemorrhage	1	
Carcinoma of stomach and marantic endocarditis	1	
Total systemic diseases		2
TOTAL SECONDARY BRONCHOPNEUMONIAS		4

Age and sex: The distribution of cases according to age and sex was similar to that observed by other physicians[7,8]. The distribution by age indicated a relative preponderance of Type I pneumonia in the decades from 20 to 40 years. The male sex predominated, accounting for 75 per cent of the cases.

Complications: Febrile complications occurred in a relatively higher number of cases than in other pneumococcic types with the exception of Type V[5]. Thirty empyemata were seen among 239 lobar pneumonias, 12.6 per cent, and other purulent complications were seen in 13 of 239 cases or 5.5 per cent, making a total of 18.1 per cent. (See table 4.) This is very

similar to the incidence reported by other writers[7, 8].

SPECIFIC THERAPY

Selection of patients: In general, all adult patients in whom pneumococci of Type I were recognized within 96 hours of the onset of acute lobar pneumonia were sought for specific treatment. Due to the treatment of cases on some of the Medical Services by other methods, or due to delay in diagnosis, only 75 of 151 cases admitted before the fifth day received serum. A few patients other than those described were given specific therapy during certain periods for purposes of investigation. Except for a brief period, the results of which have been reported[9], no formally selected controls are available. The results of therapy in the treated cases and, especially, in the 75 cases entering the hospital before the end of the first 96 hours of the disease may be compared, however, with the eventual outcome in untreated patients seen at the same period of their disease and during the same seasons. They may also be compared with control patients formally selected by others[1, 2, 3, 4].

TABLE 4

PURULENT COMPLICATIONS OF TYPE I LOBAR PNEUMONIA IN 239 ADULTS

	Number	Per Cent
Empyema	30	12.6
Pericarditis	2	0.8
Otitis Media	2	0.8
Arthritis	2	0.8
Multiple Abscess of Lung (Staphylococcus Aureus)	1	0.4
Abscess of Parotid	1	0.4
Abscess of Submaxillary	1	0.4
Abscess of Buttocks	1	0.4
Abscess of Arm	1	0.4
Abscess of Pelvis	1	0.4
Phlebitis	1	0.4
Total	43	18.1

Methods. The pneumococcic type was determined within from three to 12 hours, in the great majority of cases, by means of the stained slide agglutination test (Sabin[10]). Upon finding a Type I pneumococcus, serum therapy was begun at once. The patient was questioned carefully for allergic history in general, and for previous administration and hypersensitiveness to horse protein in particular. A skin test and an ophthalmic test were done with the therapeutic serum. The latter was done to detect, if possible, the dangerous type of horse protein sensitiveness. The dosage used routinely was 5 cc., 25 cc., and 45 cc. at two-hour intervals. All of the serum was given intravenously.* More serum was given at intervals of eight to 12 hours after the third dose if it seemed indicated by the clinical condition. In a small number of cases the details of the procedure varied as a part of other studies[9, 11].

*Concentrated serum was supplied by the Antitoxin and Vaccine Laboratory of the Massachusetts Department of Public Health. The potency varied from 2000 to 4000 units (Felton) of Type I antibody per cubic centimeter.

Duration of the Acute Disease. The duration of the acute disease was measured from onset to the time when the temperature dropped and stayed below 101°F., and the other symptoms of the acute disease subsided. The duration of acute symptoms in all the specifically treated patients who entered the hospital less than 96 hours after the onset of their illness and recovered without complications are shown in chart 1. Within 48 hours after admission to the hospital 37, or 80 per cent, of the 46 specifically treated patients had already had a sharp drop in temperature. In chart 2, all of the

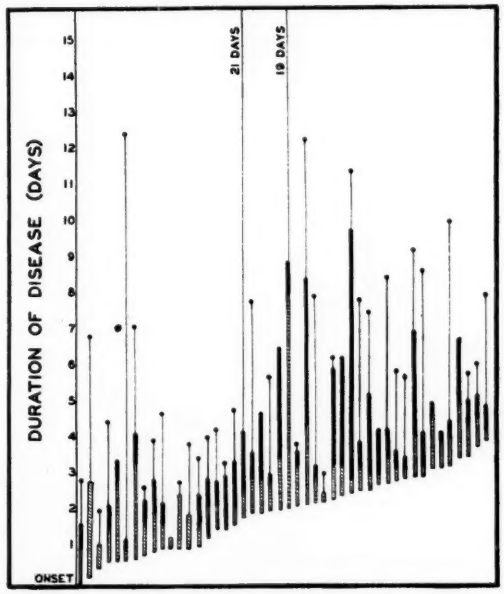

CHART 1. *Duration of the disease in 46 serum treated cases.* Each bar represents one patient. The distance of the bar from the base-line represents the duration of the disease before entry; the hatched portion, the time from admission to the time of serum administration; the solid portion, the time to the first permanent drop in temperature below 101°F.; and the light line, the time until all symptoms disappeared. Only cases admitted less than 96 hours after onset, in which recovery occurred without febrile complications, are shown.

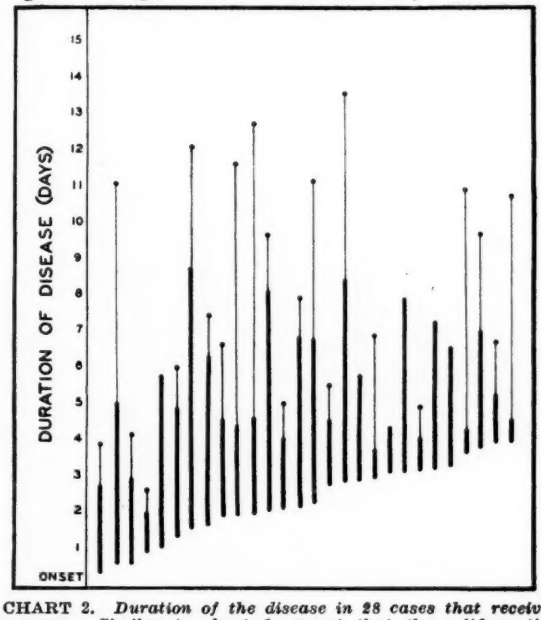

CHART 2. *Duration of the disease in 28 cases that received no serum.* Similar to chart 1, except that the solid portion here represents the time from admission to the hospital to the first persistent drop in temperature below 101°F. associated with marked symptomatic improvement.

similar cases that did not receive specific therapy are represented in the same way. A similar sharp drop in temperature occurred with general improvement in seven, or 25 per cent, of the 28 patients who did not receive specific therapy. When the treated patients are grouped, not according to the time of their admission to the hospital, but according to the time at which they actually received serum, it is found that 30, or 82 per cent, of 38 patients treated before the end of 96 hours after the onset of their disease had a sharp and persistent drop in temperature to below 101°F. within 36 hours after serum treatment was begun.

The average duration of the disease in comparable treated and untreated patients is illustrated at A and B in chart 3. The average de-

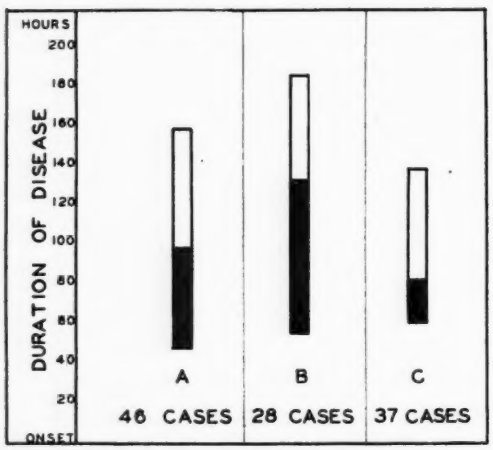

CHART 3. *Average duration of disease in serum treated and non-serum treated patients.* A. represents the average duration in 46 serum treated patients admitted to the hospital within 96 hours of the onset, already shown individually in chart 1. B. represents the average duration in 28 non-serum treated patients admitted to the hospital within 96 hours of the onset, already shown individually in chart 2.

A. and B. represent the average duration of comparable groups. The distance from the beginning of the bars to the base-line represents the average duration in each group at the time of admission, the length of the solid portion represents the average time from admission to the first persistent drop in temperature below 101°F. associated with marked symptomatic improvement. The rest of the bar represents the average time during which minor symptoms and low-grade fever persisted.

C. represents the average duration of the disease after serum therapy in 37 patients in whom treatment was begun within 96 hours after the onset of the disease. This is similar to A. and B. except that the distance of the bar from the base line represents the average duration at the time serum treatment was begun, and the solid portion represents the average duration of fever above 101°F. and acute symptoms after such treatment.

crease in duration of the disease accounted for by serum therapy was about 30 hours. The close association of serum administration with marked symptomatic improvement is shown at C in chart 3 where an average of but 12 hours intervenes between the administration of the first dose of serum and striking symptomatic improvement. This shorter average duration among serum-treated patients is accounted for almost entirely by the earlier occurrence of a marked drop in temperature. The average duration of low-grade fever and symptoms occurring subsequent to a marked improvement, is about the same in all three groups, and varies between 57 and 60 hours. The administration of specific therapy apparently hastens the occurrence of the marked symptomatic change, but has no effect upon the continued low-grade fever and lesser complaints. No difference appeared between the type of recovery in serum treated patients and patients not specifically treated. Crisis, defined as the fall of temperature from near the height of its rise to below 101°F. within 24 hours with accompanying symptomatic improvement and without relapse, occurred just as often in the specifically treated as in those not specifically treated; in 30 of 46 cases of the former, or 65 per cent, and in 18 of 25 cases of the latter, or 64 per cent, of those recovered without complications.

Course of Bacteremia. More than one blood culture was made in 65 of the specifically treated cases, and in 39 of those not specifically treated. The changes that took place in the blood cultures are shown in table 5. The effect

TABLE 5

EFFECT OF SPECIFIC SERUM THERAPY ON BACTEREMIA

	Specifically Treated	Not Specifically Treated
Bacteremia on Admission—Number	30	17
Bacteremia Disappeared—Number	26	7
Bacteremia Disappeared—Per Cent	86.6	41.1
No Bacteremia on Admission—Number	35	22
Bacteremia Developed—Number	1	5
Bacteremia Developed—Per Cent	2.8	22.7

of specific therapy was striking in that, with four exceptions, bacteria disappeared from the blood in cases with bacteremia and, with one exception, no blood invasion occurred in patients with originally sterile cultures. Comparison of the specifically treated group with the patients not specifically treated shows that bacteremia disappeared in 87 per cent of the former as compared with 41 per cent of the latter, or more than twice as often; and that bacteremia developed in three per cent of the former as compared with 23 per cent of the latter, or one-eighth as often. The four specifically treated patients, whose bacteremia persisted, were unusual in other respects. In one, a heavy bacteremia was present, 674 colonies per cc. of blood, which decreased but did not completely disappear. In two, a double infection was found, Types I and X in one, and Types I and III in the other. The first of these two patients was insufficiently treated, receiving only 30 cc. of serum shortly before exitus, and, in the second, the Type I pneumococcus was completely replaced by a very heavy infection with pneu-

mococcus Type III, 2700 colonies per cc. of blood. The fourth and last of the treated patients with persistent blood cultures continued to have a bacteremia along with an empyema. Likewise, the single patient, who developed a bacteremia after serum therapy, developed it following the appearance of empyema.

The Course of the Consolidated Area. The spreading of the area of consolidation was observed in only three treated patients and in 14 of the untreated patients. The extension of the lung lesion is apparently hindered by specific therapy.

TABLE 6

DEATH RATE AND DURATION OF THE DISEASE

	Specifically Treated			Not Specifically Treated		
	No.	No. Died	Per Cent Died	No.	No. Died	Per Cent Died
All patients	97	18	18.6	143	59	41.3
All patients admitted to the hospital less than 96 hours after the onset	75	12	16.1	76	28	36.8
Treatment begun less than 96 hours after onset	58	7	12.0			
Treatment begun more than 96 hours after onset	39	11	28.2			

TABLE 7

DEATH RATE AND AGE

(Includes Only Cases Admitted Less Than 96 Hours After Onset of Pneumonia)

Age Groups	Specifically Treated			Not Specifically Treated		
	No. of Cases	No. Died	Per Cent Died	No. of Cases	No. Died	Per Cent Died
12-29 years	27	0	0	22	8	36.4
30-49 years	33	7	21.2	28	6	21.4
50+ years	14	5	35.6	11	8	73.0

TABLE 8

BACTEREMIA AND DEATH RATE

	Specifically Treated			Not Specifically Treated		
	No. of Cases	No. Died	Per Cent Died	No. of Cases	No. Died	Per Cent Died
First blood culture positive	38	10	26.3	42	30	71.4
First blood culture negative	49	8	16.3	54	9	16.6
No blood culture made	10	0	0	47	20	42.5

The Death Rate. Although small groups of pneumonia patients, reported on many occasions, have varied in their mortality rates, large groups have been surprisingly uniform. The present series shows results which are similar to those of other series of comparable size.

In table 6, the death rate for all the patients is shown, and the rates for those specifically treated and for those not specifically treated. Such a comparison is obviously unfair because the untreated patients include a rather large number of patients who were admitted to the hospital late in the course of their disease only to die shortly afterwards, or who were admitted in such poor condition that they could give no history. A second and more fair comparison between the treated and the untreated patients is, therefore, given in table 6 for which the specifically treated patients admitted before the end of 96 hours of the disease and a similar group of the untreated patients were chosen. The death rate of the specifically treated patients is less than half that of the patients that received no specific therapy. This comparison, in turn, does not represent the best effects of early therapy, since patients are included on the basis of their time of entrance to the hospital without allowance for delays and variations in the institution of specific therapy. The death rate of patients in whom serum administration was begun before the end of 96 hours of the disease is, therefore, also shown, and for comparison the death rate in patients in whom serum administration was begun after the end of 96 hours of disease. The use of specific serum therapy before the end of 96 hours after the onset reduced the death rate to 12 per cent. This compares favorably with the figures reported by Cole[12], Cecil and Plummer[4], Finland[3], and Heffron and Anderson[13].

Death Rate and Age of Patients. One of the

TABLE 9

PROGNOSTIC FACTORS AMONG SPECIFICALLY TREATED CASES ENDING FATALLY

(Includes Only Cases Admitted Less Than 96 Hours After Onset of the Disease)

Year	Case Number	Age	Duration in Hours				Amount of Serum cc.	Alcoholism	Blood Culture Before Treatment	Systemic Complications	Postmortem
			To Admission	After Admission	To Treatment	After Treatment					
29-30	1	44	In Hosp.	50	46	4	30	++++	Neg.	0	0
	5	74	55	87	130	12	74	0	1000 Col.	Arteriosclerosis, Aur. Fib.	0
	14	76	81	51	111	21	100	0	Neg.	Arteriosclerosis, Aur. Fib.	0
	*30	50	11	76	22	65	115	+	Neg.	Hem. Strep. in sputum	0
30-31	4	39	45	25	60	10	119	++	Pos.	Pn. III in sputum	0
	6	30	In Hosp.	106	71	35	135	0	24 Col.	Miscarriage	0
	21	34	36	72	77	31	108	0	674 Col.		Organizing Pneumonia Fatty Liver
	29	66	56	61	113	4	30	0	11 Col. per cc.	Septicemia, Pn. X	0
	32	33	78	173	136	115	276	++	Pos.		
31-32	5	45	64	172	211	21	117	0	Pos.	0	Lobar Pneumonia
	10	74	28	208	41	195	55	0	Pos.	Senile	General Arteriosclerosis Staph. Aur., Strep. Hem.
	24	30	23	456	45	434	55	+	Pos.	Septicemia, Hem. Strep.	

*Underlined cases had relatively good prognosis.

TABLE 10

PROGNOSTIC FACTORS AMONG PATIENTS NOT SPECIFICALLY TREATED ENDING FATALLY

(Includes Only Cases Admitted Less Than 96 Hours After Onset of Disease)

Year	Case No.	Age	Duration in Hours To Adm.	Duration in Hours After Adm.	Alcoholism	First Blood Culture	Systemic Complications	Postmortem
1929-30	2	68	28	163	0	Positive	0	Lobar Pneumonia
	*5	53	47	130	0	Negative	0	0
	9	62	19	179	+	Negative (+ later)	0	0
	18	60	83	22	0	200 Col. per cc.	Pyelonephritis	Lobar Pneumonia
	19	62	24	48	++	Negative (+ later)	0	0
	25	70	4	111	0	70 Col. per cc.	0	0
	27	20	52	76	0	Negative	0	0
	35	51	3	321	0	Negative	Arteriosclerosis, Aur. Fib.	Empyema
	36	21	63	135	0	Positive	0	Lobar Pneumonia
	74	59	85	97	0	Negative	0	0
	43	45	21	216	0		0	Empyema
	62	19	93	31 days	0	Negative	Empyema	
1930-31	5	29	21	215	0	Negative (+ later)	0	Pericarditis, Card. Infarct.
	6	58	74	109	0	Negative	Arteriosclerotic Heart Disease, Uremia	0
	27	24	22	100	0	250 Col. per cc.	0	0
	31	71	48	45	0	—	Arteriosclerotic Heart Disease	Bronchiectasis
	32	75	In Hosp.	187	0			Chronic Nephritis, Gen. Arteriosclerosis
	33	61	39	17	0			Lobar Pneumonia
	34	27	80	115	0	Positive	0	0
	39	40	56	161	+	Positive	0	0
	46	52	48	48	0	Positive	0	0
1931-32	4	64	36	88	0		0	0
	1	37	46	65	+	9 Col. per cc.	0	Lobar Pneumonia
	5	46	33	195	++++	Positive	0	0
	20	35	48	118	+++	Negative	0	Lobar Pneumonia
	28	41	72	131	0	Positive	0	0
	29	25	53	208	0	Negative (+ later)		Lobar Pneumonia
	40	21	60	99	0	Negative	0	0

*Underlined cases had relatively good prognosis.

most important and constant of the factors affecting the prognosis in lobar pneumonia is age. Table 7 shows the death rates in three different age groups in comparable groups of cases with and without specific therapy. In the age group 12 to 29 years, no treated patient died. Reduction of the death rate in Type I pneumonia at all ages, over 12, has been reported by others[1]. These figures indicate that old age and youth are both benefited by its use.

Death Rate in Bacteremic Patients. The marked effect of serum therapy upon bacteremia leads one to expect a corresponding effect upon the death rate in bacteremic cases. Table 8 shows that the most pronounced effect of serum therapy was in the group of patients who had positive blood cultures.

Description of Cases with Fatal Outcome. A study of the deaths among the serum treated cases admitted within 96 hours of onset of the disease (table 9) brings out certain conditions that may be responsible for the failure of serum treatment. Ten of the 12 serum treated patients who died had unusually bad prognoses due to age (60 years and over), systemic diseases, marked alcoholism, more than one strain of organism in the blood stream, marked bacteremia, insufficient amounts of serum or treatment very late in the disease. Similar complicating factors, indicating a bad prognosis, were found in 16 of 28 comparable fatal cases not receiving specific treatment. (Table 10.) It is thus possible to point out a greater proportion of cases with bad prognoses among the specifically treated cases ending fatally. There was no apparent reason for death, other than lobar pneumonia, in only two serum treated cases as compared with 12 comparable non-serum treated cases.

DISCUSSION

When seeking to evaluate the importance of specific Type I antipneumococcic therapy, its relationship to pneumonia, as a whole, needs consideration. By reason of its type-specificity and need for early application, it is useful in only one of ten patients that may be suspected at some time in their illness of having pneumococcic pneumonia, and in only one of every five patients who are known to have pneumococcic lobar pneumonia. The number of cases of lobar pneumonia reported per year in Massachusetts is from 4,080 to 5,544[14], making about one case per year for each of 6595 practicing physicians. This places Type I pneumonia cases seen early in a class with infrequent or rare diseases. Within this limitation, Type I antipneumococcic serum therapy is of the greatest usefulness. It is, at present, the only well-demonstrated therapeutic measure to add to the usual symptomatic treatment of pneumonia. Vaccine therapy has not been studied with such thoroughness and is not supported by convincing animal experimentation. The use in man of the type-specific enzymes of Avery and Dubos[15] has not as yet been reported. In the present state of our knowledge, specific serum therapy gives greater promise of extending specific therapy to pneumonia, as a whole, than any other proposed therapeutic measure, as has been indicated through its successful use in Type II pneumonia[16,17], and the suggestive effects obtained in other rarer types[18].

The problems remaining in regard to this therapeutic agent concern almost entirely its practical applications. These have been considered and, to a large extent, solved, as evidenced by the favorable results reported in the literature and referred to above. The essentials of its administration are commonplaces of medicine, and may readily be applied as the value of specific serum is appreciated. They may be enumerated as (1) alertness in diagnosis, so that cases may be recognized as early as possible[19]; (2) bacteriological examination of the sputum[20,21]; (3) a knowledge of the safe administration of intravenous therapy[22].

One difficulty has been discussed rather widely, namely, the high cost of potent serum. This financial matter is gradually being met. Improvements in manufacture and distribution and increased use are bringing about a decrease in cost. This therapy, however, is so valuable that the costs, whatever they are, must be met by appropriate authorities.

SUMMARY AND CONCLUSIONS

The foregoing data, and similar results obtained by other observers, leave no room to doubt that concentrated Type I antipneumococcic serum exerts a striking symptomatic effect and reduces the death rate by one-half in Type I lobar pneumonia in adults. Repeated studies have also shown that the effects are type-specific[11], that treatment early in the course of the disease is more effective than later, that treatment is equally effective at all ages, and that bacteremia, as a symptom, and bacteremic cases, as a group, are especially amenable to specific therapy. The results that may be expected in patients treated before the end of 96 hours of illness may be briefly summarized as a marked symptomatic change in two-thirds of the recovered patients within 36 hours of beginning treatment, and a death rate approximating ten per cent.

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THE CERVICAL CESAREAN SECTION*

An Analysis Based on the Study of Five Hundred and Fifteen Personal Operations

BY LOUIS E. PHANEUF, M.D.†

IN 1907, Frank, of Cologne, having become dissatisfied with the results of the classical cesarean section, especially in women who had been long in labor and were presumably infected, proposed effecting abdominal delivery through the lower uterine segment. The method soon found adherents in Germany but was not enthusiastically received elsewhere. Only within the last fifteen years has it been given careful consideration in the United States. At the present time it is slowly but gradually replacing the conservative or classical cesarean section. During the last twenty-five years the procedure has been modified in numerous small details and the names of various operators have become attached to it. I have endeavored to consider these modifications upon an anatomical basis.

Anatomically the lower uterine segment may be approached by one of three methods in performing cesarean section—1, *Extraperitoneally,* the operation most used nowadays being the modification of Latzko. 2, *Transperitoneally,* peritoneal exclusion—represented by the procedure of Veit-Fromme-Hirst, where the layers of parietal and visceral peritoneum are united by sutures, thus creating a so-called extraperitoneal space. 3, *Intraperitoneally,* where the abdomen is opened by a longitudinal median suprapubic incision and the bladder separated from the lower uterine segment which is incised either longitudinally or transversely to accomplish delivery. Following the closure of the incision the bladder is sutured back on the uterus in such a way that the incision becomes retrovesical, retroperitoneal or subperitoneal. The cervical incision thus becomes isolated from the general peritoneal cavity.

The extraperitoneal operation is usually performed on the frankly infected woman whose labor has been mismanaged. My personal feeling in this regard is that when a parturient patient has reached this stage of neglect and needs an abdominal delivery her life is better protected by the supravaginal amputation of the uterus or Porro cesarean section. It is an established fact that a virulent organism, the streptococcus for instance, may find its way through the intact peritoneum after the extraperitoneal cesarean and cause general peritonitis. My only death from peritonitis in a series of 515 consecutive cervical cesarean sections occurred in a woman delivered by the extraperitoneal route, while in a series of seven badly mismanaged labors, terminated by the Porro method, all the parturients recovered. These severely infected patients as a rule form but a small group in the large series of cases. The transperitoneal operation—peritoneal exclusion—is reserved for women who have been long in labor, whose membranes have been ruptured for many hours and who have been subjected to vaginal examinations. Although no clinical signs of infection may be present, in the light of our present knowledge, they are considered as presumably infected. The intraperitoneal operation, which I prefer to perform, with a transverse incision in the lower segment, is used on the average patient and may be safely executed after an adequate test of labor under aseptic conditions. This last method has been substituted for the classical cesarean section in my practice for a number of years.

I have personally performed 515 cervical

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cesarean sections using the four types of operations according to table I.

TABLE I

TYPE OF OPERATION

Total number of cervical cesarean sections		515
Extraperitoneal	(Latzko)	2
Transperitoneal	(Peritoneal Exclusion) Veit-Fromme-Hirst	61
Intraperitoneal	(Longitudinal cervical incision Krönig)	160
	(Transverse cervical incision)	292

In analyzing these 515 cervical cesarean sections, tables are used for the sake of clearness and the anatomical classification described above is adhered to.

TABLE II

NUMBER OF PREGNANCIES

	Extra-peritoneal	Trans-peritoneal	Intraperitoneal Longitudinal incision	Intraperitoneal Transverse incision
Para I	1	44	63	120
Para II		11	45	78
Para III			27	52
Para IV		3	13	19
Para V		1	7	11
Para VI		1	1	4
Para VII		1	2	
Para VIII			1	2
Para IX			1	2
Para X	1			3
Para XI				1
Total	2	61	160	292

TABLE III

LABOR

	Extra-peritoneal	Trans-peritoneal	Intraperitoneal Longitudinal incision	Intraperitoneal Transverse incision
Test of labor	2	43	44	95
No labor	0	18	116	197
Total	2	61	160	292

EXTRAPERITONEAL

Two patients had labor. In one the hours were not determined; the cervix was fully dilated. The second was in labor thirty-six hours.

TRANSPERITONEAL

The 43 patients who had labor had the following number of hours: 72 hours, one patient; 67 hours, one patient; 48 hours, one patient; 36 hours, two patients; 35 hours, one patient; 34 hours, one patient; 25½ hours, one patient; 24 hours, eight patients; 23 hours, one patient; 20 hours, one patient; 18 hours, one patient; 17 hours, one patient; 16 hours, two patients; 14 hours, two patients; 12 hours, two patients; 6 hours, one patient; 5 hours, one patient; 4 hours, one patient. In the other 14 patients who had labor the number of hours was not noted.

INTRAPERITONEAL

Longitudinal Incision

The 44 patients who had labor had the following number of hours: 72 hours, one patient; 36 hours, one patient; 26 hours, one patient; 24 hours, five patients; 17 hours, one patient; 16 hours, one patient; 12 hours, six patients; 10 hours, one patient; 8 hours, one patient; 6 hours, two patients; 3 hours, one patient. In the other 23 patients who had labor the number of hours was not determined.

Transverse Incision

The 95 patients who had labor had the following number of hours: 72 hours, two patients; 64 hours, one patient; 48 hours, two patients; 36 hours, one patient; 30 hours, two patients; 29½ hours, one patient; 27 hours, one patient; 26 hours, two patients; 24 hours, four patients; 21 hours, one patient; 20½ hours, one patient; 20 hours, four patients; 19½ hours, one patient; 19 hours, one patient; 17 hours, two patients; 16 hours, four patients; 15½ hours, one patient; 15 hours, four patients; 14½ hours, one patient; 14 hours, four patients; 13 hours, two patients; 12½ hours, two patients; 12 hours, eight patients; 11 hours, two patients; 10 hours, two patients; 9 hours, two patients; 8 hours, eight patients; 7½ hours, one patient; 7 hours, three patients; 6 hours, six patients; 5 hours, two patients; 4 hours, three patients; 3 hours, two patients; 2¾ hours, one patient; a few hours, three patients. In the other 8 patients who had labor the number of hours was not determined.

TABLE IV

MEMBRANES

	Extra-peritoneal	Trans-peritoneal	Intraperitoneal Longitudinal incision	Intraperitoneal Transverse incision
Membranes ruptured	1	8	11	34
Membranes intact	1	53	149	258
Total	2	61	160	292

EXTRAPERITONEAL

In one woman the membranes had been ruptured many hours; in the other they were intact.

TRANSPERITONEAL

In one woman the membranes had been ruptured 24 hours. The other seven women had long labors and the membranes had been ruptured many hours.

INTRAPERITONEAL

Longitudinal Incision

The membranes were ruptured 10 hours in one, 6 hours in another and the number of hours in 9 not determined.

Transverse Incision

The membranes in 34 patients had been ruptured the following number of hours: 72 hours, one patient; 48 hours, three patients; 30½ hours, one patient; 30 hours, one patient; 26 hours, one patient; 24 hours, two patients; 21 hours, one patient; 19 hours, one patient; 18 hours, one patient; 17 hours, one patient; 15 hours, one patient; 14 hours, one patient; 12 hours, two patients; 8 hours, two patients; 7 hours, two patients; 3 hours, one patient; 2¾ hours, one patient. In 11 patients the hours were not determined.

TABLE V

CERVICAL DILATATION

	Extraperitoneal	Transperitoneal	Intraperitoneal Longitudinal incision	Intraperitoneal Transverse incision
Cervix fully dilated	2	7	3	9
Cervix half dilated		8		3
Cervix one-third dilated				1
Cervix one-quarter dilated		9		
Cervix dilated to admit				
4 fingers				1
3 fingers			1	3
2 fingers		1	6	2
1 finger			5	
Cervix slightly dilated		15		
Dilatation not determined			29	76
Total	2	40	44	95

In the 181 patients who had labor the amount of cervical dilatation is expressed in Table V. In the 334 who had no labor the cervix was dilated from above at the time of operation, to favor drainage.

There were 28 vaginal examinations, 27 performed outside and 1 in the hospital.

One parturient had a sixty-four hour labor followed by a trial high forceps. Since it was impossible to bring down the head with moderate traction she was delivered by a transverse cervical cesarean section, the placenta and membranes being delivered through the vagina. She had an afebrile puerperium and no postoperative complications.

All labors in my practice are conducted by rectal examinations, hence the small number of vaginal examinations.

In a number of instances there were two or more indications. When this condition obtained the most important indication was listed.

TABLE VI

VAGINAL EXAMINATIONS

	Extraperitoneal	Transperitoneal	Intraperitoneal Longitudinal incision	Intraperitoneal Transverse incision
Several vaginal examinations	2	5	4	
Three vaginal examinations				1
Two vaginal examinations		5	1	1
One vaginal examination		1	3	5

For local anesthesia a one per cent solution of novocaine was used.

For spinal anesthesia novocaine crystals dissolved in spinal fluid were employed. The dosage has been 100, 120 and 150 mg. the last dose being rarely used and only in large women.

Avertin, 0.080-0.090 mg. per kilo was used as basal anesthesia and followed by nitrous oxide oxygen anesthesia.

In the study of maternal mortality certain conditions have to be given consideration. No just comparison can be made of a series of operations carried out in a well-equipped maternity center where all the facilities are available, where there has been no contamination during labor and where an operating room is set aside for cesarean sections with another series of operations, many of which were performed in small town hospitals, where but one operating room exists for septic as well as clean cases, where the patient has been in labor many hours and where frequently she has been subjected to vaginal examinations. Even while operating under these adverse conditions, for women requiring cesarean section are frequently seen in consultation in their own communities, the cervical cesarean section has been responsible for saving the lives of many parturients who otherwise might have been doomed. Again, the mortality will be influenced by the condition for which the cesarean is done. For example, the result of an operation performed for disproportion between the pelvis and the presenting part

TABLE VII

INDICATIONS

	Extraperitoneal	Transperitoneal	Intraperitoneal Longitudinal incision	Intraperitoneal Transverse incision
Cephalopelvic disproportion	2	38	69	95
Cephalopelvic disproportion and myoma		1		1
Spondylolisthetic pelvis		1		
Nagele pelvis			1	1
High breech, generally contracted pelvis		2	4	10
Transverse presentation		1		1
Dystrophia, dystocia syndrome				1
Previous classical cesarean section		4	10	17
Previous cervical cesarean section			36	92
Previous classical and cervical cesarean sections			1	
Eclampsia		3	2	
Toxemia of pregnancy			8	13
Soft part dystocia from previous vaginal plastics and suspension			3	20
Repair of complete perineal tear and suspension			2	
Repair of complete perineal tear				1
Amputation of cervix and vaginal plastics			5	
Abdominal fixation of uterus causing dystocia			1	
Previous vesico-vaginal fistula (repaired)				1
Congenital malformation of vagina obstructing labor		1		
Elderly primipara, rigid soft parts			1	3
Cervical dystocia		4		
Central placenta previa		2	5	14
Marginal placenta previa				2
Lateral placenta previa				1
Abruptio placentae		4		1
Uterine apoplexy, toxemia of pregnancy			5	2
Valvular heart disease, mitral stenosis and regurgitation			6	7
Valvular heart disease, aortic regurgitation and mitral regurgitation			1	
Thyrocardiac				3
Previous multiple myomectomy				1
Multiple myomectomy, fifth month of pregnancy				1
Advanced pulmonary tuberculosis				1
Bilateral congenital hip disease				1
Chronic nephritis				2
Total	2	61	160	292

TABLE VIII

ANESTHESIA

	Extraperitoneal	Transperitoneal	Intraperitoneal Longitudinal incision	Intraperitoneal Transverse incision
Local Anesthesia			5	19
Spinal Anesthesia		1	4	38
Avertin and Nitrous Oxide Oxygen Anesthesia				17
Nitrous Oxide Oxygen Ether Anesthesia	2	60	151	218
Total	2	61	160	292

on a woman in good physical condition should be different from that performed for uterine apoplexy, toxemia, chronic nephritis and valvular heart disease with decompensation.

The 515 cervical cesarean sections reported were performed in 37 hospitals varying in equipment from that of the modern maternity center to that of the small town general hospital. From the standpoint of fetal mortality it is not difficult to concede that a new-born will have a better chance of surviving, especially if premature, in the well-appointed, well-heated and well-ventilated nursery than when placed in an ordinary room lacking these facilities, even though it is also called a nursery.

The mortality figures given represent gross mortality figures. None of the statistics were corrected.

EXTRAPERITONEAL

The woman who had an extraperitoneal cesarean section and recovered was subsequently delivered by a Porro cesarean section because she was again admitted after a long labor and frankly infected. The bladder was adherent on the left side of the uterus but was separated without undue difficulty in performing the hysterectomy.

TABLE IX

POSTOPERATIVE COMPLICATIONS

	Extraperitoneal	Transperitoneal	Intraperitoneal Longitudinal incision	Intraperitoneal Transverse incision
Septic uterus with utero-abdominal fistula		9		
Sepsis of abdominal incision		1	3	9
Low grade uterine sepsis				2
Pulmonary infections—(Pneumonia, Influenza, Bronchitis)			2	11
Thrombophlebitis			6	6
Pyelitis			2	8
Lochiometra			2	6
Dilatation of stomach			4	5
Postpartum eclampsia			1	1
Intestinal paresis				2
Recurrent pelvic inflammation				1
Puerperal psychosis				1
Pulmonary embolism (small embolus and recovery)			2	
Acute mastitis (no abscess)			1	

TABLE X

MATERNAL MORTALITY

Type of Operation	Number	Maternal Death	Per Cent
Extraperitoneal (Latzko)	2	1	50.0
Transperitoneal (Veit-Fromme-Hirst) (Peritoneal Exclusion)	61	5	8.1
Intraperitoneal			
Longitudinal incision	160	9	5.6
Transverse incision	292	7	2.3
Total number of operations	515	Deaths 22	Per Cent 4.2

TABLE XI

MATERNAL DEATHS

By Causes

22 deaths in 515 operations, 4.2 per cent

Pulmonary embolism	5—	0.97 per cent
Gastric dilatation	2—	0.38 per cent
Uterine apoplexy	2—	0.38 per cent
Pneumonia	3—	0.58 per cent
Heart disease	4—	0.77 per cent
Septicemia	1—	0.19 per cent
General peritonitis	1—	0.19 per cent
Eclampsia	3—	0.58 per cent
Chronic nephritis, myocarditis, bronchitis, emphysema	1—	0.19 per cent

TABLE XII

FETAL MORTALITY

	Extraperitoneal	Transperitoneal	Intraperitoneal Longitudinal incision	Intraperitoneal Transverse incision
Stillborn	2	5	4	
Macerated fetus	1	2	1	
Prematurity	1		4	
Atelectasis pulmonum	3		1	
Congenital heart disease		2	1	
Underdevelopment			2	
Status lymphaticus			1	
Hemorrhage of newborn			1	

523 children were delivered, 31 of whom did not survive, a gross fetal mortality of 5.9 per cent.

TABLE XIII

REPEATED CERVICAL CESAREAN SECTIONS

For the purpose of this study the operations done with a longitudinal incision are grouped together as are those which were performed with a transverse incision in the lower segment. The first three groups, extraperitoneal, transperitoneal and intraperitoneal with a longitudinal incision, all having had longitudinal cervical incisions, total 223. The second group consists of 292 operations with a transverse cervical incision.

CERVICAL CESAREAN SECTIONS 515

With a longitudinal incision 223
With a transverse incision 292

REPEATED OPERATIONS

Longitudinal Incision		*Transverse Incision*	
6 cervical cesareans on 2 women	12	3 cervical cesareans on 8 women	24
5 cervical cesareans on 1 woman	5	2 cervical cesareans on 29 women	58
4 cervical cesareans on 5 women	20		
3 cervical cesareans on 12 women	36		
2 cervical cesareans on 46 women	92		
Total	165	Total	82

TABLE XIV

CERVICAL SCARS

Longitudinal Incision	*Transverse Incision*
165 operations on 66 women, therefore,	82 operations on 37 women, therefore,
99 previous scars examined.	45 previous scars examined.
93 scars solid and invisible to the naked eye.	40 scars solid and invisible to the naked eye.
3 scars (3.2 per cent) were defective.	3 scars identified as thin lines.
2 scars were thin.	2 scars (4.4 per cent) defective.
1 scar partly extended in body of uterus, was healed in lower segment, thin in its corporeal portion.	1 scar at the fifth cesarean was thin.
	1 scar at the third cesarean had a thin area below incision.

There were no ruptured scars in this series of cases.

TABLE XV

PELVIC DELIVERIES FOLLOWING CERVICAL CESAREAN SECTION

Longitudinal Incision		*Transverse Incision*	
8 parturients were delivered through the pelvis.		6 parturients were delivered through the pelvis.	
Medium forceps	2 women	Version and extraction	1 woman
Scanzoni maneuver	1 woman	Normal delivery, (2) Scanzoni, (3) Scanzoni, (4) Normal delivery	1 woman
Medium forceps, then delivery of twins, one by low forceps, the other by version and extraction	1 woman	Scanzoni maneuver	1 woman
3 normal deliveries	2 women	Medium forceps	1 woman
2 normal deliveries	1 woman	Low forceps	1 woman
1 normal delivery	1 woman	Normal delivery	1 woman

14 women had 23 pelvic deliveries. 24 babies were born, 23 lived.
One premature 6 months, normal delivery, lived a few hours.
All puerperia normal.

TABLE XVI

POSTOPERATIVE ADHESIONS

	Extraperitoneal	Transperitoneal	Intraperitoneal Longitudinal incision	Intraperitoneal Transverse incision
Bladder adhesions	1		2	1
Peritoneal adhesions		22	13	15
Omental adhesions			7	1
Peritoneal and omental adhesions				2
Uterine adhesions				1
Total	1	22	22	20

TRANSPERITONEAL

This operation was not repeated but 22 women had intraperitoneal cervical cesarean sections performed subsequently, either with a longitudinal or transverse incision of the lower segment. In these 22 women a band of peritoneum, varying in width, was found extending from the cervix to the parietal peritoneum. This band was resected before separating the bladder a second time.

INTRAPERITONEAL

Longitudinal Incision

Adhesions were encountered in 22 patients, one band of peritoneum from the bladder to the abdominal incision in 8 women, 2 bands in 4 women and 3 bands in 1 woman. A small omental adhesion to the parietal peritoneum in 5 women and a small omental adhesion to the uterine fundus in 2 women. In one of these it was the fourth and in the other the third operation. The bladder was adherent to the parietal peritoneum in 2 instances.

INTRAPERITONEAL

Transverse Incision

Adhesions were found in 20 patients. A single omental adhesion to the abdominal scar was encountered six times. One thin band of peritoneum was noted in three women, two thin bands of peritoneum in two women and three thin bands of peritoneum in two women. In one woman two bands of peritoneum and one omental adhesion to the abdominal scar were discovered. In one patient there existed one band of peritoneum and one omental adhesion to the uterine fundus. The uterine body was ad-

herent to the abdominal scar in one instance. Firm peritoneal adhesions in the region of the bladder were met once. In one woman who had had a classical and a transverse cervical cesarean section one band of peritoneal adhesions was found adherent to the classical scar, none to the cervical. In another patient who had had one transperitoneal, three intraperitoneal with longitudinal incisions and one intraperitoneal with a transverse incision, a small omental adhesion was found at the upper angle of the abdominal incision, when performing the sixth operation. In still another patient there was a band of peritoneum extending from the bladder to the parietal peritoneum at the second intraperitoneal operation with a transverse cervical incision.

There were 144 repeated operations, deducting 22 transperitoneal operations (peritoneal exclusion) in which we always find a band of adhesions, we have 122 cases for study. Of these 122 cases 42 had adhesions as described above and 80 had no adhesions whatsoever. The very important point in this study is the fact that in 144 repeated operations no intestinal adhesions of any kind were encountered.

SUMMARY AND CONCLUSIONS

Five hundred and fifteen cervical cesarean sections are reported as follows: extraperitoneal 2; transperitoneal 61; intraperitoneal, with a longitudinal cervical incision 160 and intraperitoneal, with a transverse cervical incision 292.

These operations were performed by one operator in 37 hospitals varying from the large maternity hospital to the small town general hospital.

The cervical cesarean section protects against septic peritonitis, is responsible for better healing of the incision and permits an easier convalescence.

The cervical cesarean section may be repeated with ease. Two women each had six operations. (Table XIII.)

In 144 repeated operations no intestinal adhesions of any kind were found.

Fourteen women had 23 pelvic deliveries following cervical cesarean section, resulting in the birth of 24 children. The puerperia were all normal.

The uncorrected maternal mortality was 4.2 per cent. The best mortality figures were obtained in 292 consecutive transverse cervical cesarean sections, where it was 2.3 per cent.

The gross fetal mortality, including stillborns, was 5.9 per cent. (Table XII.)

An efficient test of labor may safely precede this operation, thus allowing a number of women to be delivered through the pelvis who otherwise might have been delivered abdominally.

In performing the intraperitoneal operation I prefer the transverse cervical incision to the longitudinal since by so placing the incision, its extension into the uterine musculature is prevented.

BERIBERI SECONDARY TO SHORT-CIRCUITED SMALL INTESTINE

BY THOMAS V. URMY, M.D.,† B. HARRISON RAGLE, M.D.,† ARTHUR W. ALLEN, M.D.,† AND CHESTER M. JONES, M.D.†

INTEREST in the so-called deficiency states has long been active by reason of such well-defined clinical entities as pellagra, beriberi and scurvy. Recently it has been greatly increased through the recognition of many other definite conditions of ill health apparently due to prolonged subsistence on what have been called suboptimal, if not wholly deficient, diets. It has also been more clearly appreciated that the nutrition of an individual is conditioned not only by the food eaten but just as importantly by its degree of digestion and absorption. In fact, in this section of the world, though there exist many borderline states of avitaminosis in otherwise normal people, the full-blown picture of one or more of the classical deficiency diseases is rarely seen in the absence of some definite gastro-intestinal lesion. In pellagra this relationship has been amply shown by the reports of Barnes[1], Turner[2], Eusterman and O'Leary[3], and Boggs and Padget[4]. Scurvy in cases of chronic digestive disorders, especially ulcer, is not very uncommon in any large hospital clinic; though here, perhaps, self-limitation of diet because of symptoms is a greater factor than vomiting or other inadequacy in digestion itself. Beriberi has, from our experience and review of the literature, been a much less common complication, and for this reason we have thought it worth while to report the following case in which its clean-cut manifestations developed slowly after the establishment of a large, blind loop of small intestine. Since encountering this case we have seen another instance in an ulcerative colitis patient with ileostomy, recently reported by one of us[5]. There has also been observed a third case[6], which showed only the neurological features of beri-

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beri two and one-half years after the establishment of an enterostomy between the stomach and lower ileum. Suitable therapy brought striking improvement in all three of these patients.

Though two of the patients had such similar anatomic findings as to suggest that there may be some specific relationship between this particular defect and beriberi, it would be difficult to prove it on our present knowledge. Little, Zerfas and Trusler[7] have reported a case with a very similar operative story who developed typical pernicious anemia despite the finding of normal gastric acidity. There was nothing to suggest beriberi. It would seem most logical to consider that a short-circuiting of the small bowel, such as we observed, causes only a marked general impairment of absorption. An imbalance in diet or some idiosyncrasy in the patient probably determines the particular syndrome to be developed.

CASE REPORT

In May, 1926, a forty-seven-year-old native retired lawyer twice developed intestinal obstruction during convalescence from an interval appendectomy. He was finally left with a hastily done lateral anastomosis between small intestinal loops which short-circuited an unknown length of bowel. Immediately the patient began to have diarrhea. It was limited almost entirely to the night, when there would be from four to six bulky, semi-formed or liquid stools containing large amounts of fatty acids and soaps and some fat. At the same time he developed a tremendous appetite and took three very large and varied meals daily. Two months after his original operation his weight had fallen from 168 to 115 pounds.

A few months later he began vomiting about once a day, always in the evening after his supper. His hunger would force him to eat another large meal as soon as the vomiting had ceased.

When seen one year after operation the patient had gained no weight. He was very thin, flushed and anxious looking. The tongue was a brilliant red, although not sore. The blood pressure was low, 95 systolic and 70 diastolic, and there was remarkably active peristalsis visible through his thin abdominal wall. In an effort to check the diarrhea the patient was put on a dry, low-residue diet which consisted chiefly of toast, potatoes, thick cereal, rice, boiled milk, chicken, and fish, to which after a few months other meats and small amounts of cooked vegetables were added. On the new diet the diarrhea rather quickly stopped excepting for an occasional attack. He began having normally one movement during the night and one or two early in the morning after rising. The stools still contained large amounts of fat and fatty acids.

At the end of six months, or one and one half years after operation, the patient had gained 25 pounds. The unusual redness of the tongue had disappeared. However, he had begun to complain of a feeling of pressure across the left chest, on exertion. He had also noticed a slight swelling of the feet and lower legs. The heart was found rapid, with sounds of fair quality. There was a systolic murmur heard at apex and base. An x-ray showed no enlargement. The blood pressure was 160 systolic and 80 diastolic. The lungs were clear. There was no ascites. The gait had a certain unsteadiness, although there was no real ataxia. The knee jerks were not obtained. There was some slight decrease in tactile sensation in the feet. Position sense was retained. An electrocardiogram was essentially normal, with auricular and ventricular rates of 90, regular rhythm, and a conduction time of .12 seconds. The QRS_1 was greater than QRS_2. The QRS and T waves were inverted in lead III.

At this time small amounts of orange, grapefruit, pineapple and tomato juices, to a maximum of not over three or four ounces daily, were added to the diet. The legs improved somewhat and the patient was able to carry on fairly comfortably until the fall of 1928, two and one half years after operation, when increasing weakness, particularly of the legs, developed.

He now showed marked emaciation and apparent wasting of the muscles generally, though there was better strength in all groups than the appearance suggested. His weight was 135 pounds stripped. There was no tenderness over the nerve trunks. The gait was weak with definite difficulty in raising the toes, but true foot drop was not present. The muscles of the thighs and calves showed symmetrical atrophy, less striking in the feet because of swelling. The feet perspired freely. There was moderate tenderness over the calves and thighs. The left knee jerk was not obtained, and the right only with reinforcement. Neither of the Achilles' jerks was obtained, nor was there plantar response. There was diminished pain sense in the feet, but touch, temperature, vibration and position senses were present. The Romberg test was slightly positive.

The patient began going steadily downhill with increasing weakness, numbness and tingling of the feet, loss of weight, palpitation and dyspnea. He developed much discomfort and actual distress in the epigastrium which came two or three hours after meals, but was not relieved by food. His appetite remained enormous. For the first time since operation he became constipated enough to require mineral oil for a daily bowel movement.

In February, 1929, an acute respiratory infection aggravated all symptoms, so that the patient was finally readmitted to the hospital in March, 1929. Nearly three years had elapsed since his original operation.

He was now completely exhausted. The pulse rate was 100, the blood pressure varied from 100/70 to 150/90. There was slight deep tenderness high in the epigastrium. Peristalsis was visible and active. There was slight edema of the feet. The patient was so weak that he could not move his feet, both of which now showed definite toe drop. He was given a transfusion soon after admission and was treated with digitalis and sedatives, but his course was nevertheless steadily downward. There was a series of attacks of low substernal pain and pressure associated with pallor, during which the patient would attempt to sit up. Nitroglycerine relieved them. Constipation became marked.

The red blood cell count was 3,700,000. Hemoglobin was 75 per cent. White cells numbered 7,400 with a differential count of neutrophiles 74 per cent, lymphocytes 13 per cent, large mononuclears 12 per cent and eosinophiles 1 per cent. The general blood picture was that of mild secondary anemia. The urine was negative to routine examination, excepting for occasional red blood cells and small amounts of albumin, due, probably, to renal stones, which had been discovered six months after operation. The stools still contained moderate amounts of undigested muscle fibre and neutral fats in addition to rather large amounts of soaps. The serum calcium was 10.2 mgs. per 100 cc. and the serum protein 9.8 per cent. A sugar tolerance curve fol-

lowing the ingestion of 100 Gm. of glucose showed values ranging from 79 mgs. fasting to 158 mgs. at one half hour, 178 at one hour and 166 at two hours. A gastric analysis showed normal acidity. A duodenal analysis revealed a free flow of bile, grossly and microscopically negative. Tests for pancreatic enzymes by the method of McClure, Wetmore and Reynolds[8] showed an amylase of 1.7 mgs. and protease of 3.0 mgs., both well within normal limits, but no lipase.

Roentgen examination demonstrated the short-circuited bowel and much stasis in the lower ileum and cecum. It was impossible to determine the exact sites of anastomosis or the length of functioning small intestine.

The patient's voice became so weak that it could not be raised above a whisper.

About a month after entry a second transfusion was given. At this time also he started to take a concentrate of brewer's yeast with doses as high as eight teaspoonfuls daily. This was supplemented by small amounts of cooked vegetables, liver extract, fruit juices and other vitamin preparations. Later cod liver oil was added and for a time small doses of insulin were given in an attempt to improve his nutrition. After about a month there was slight but definite benefit. The bowels were less constipated. There was a good deal less of abdominal discomfort and no anemia (he had had a third transfusion meanwhile). The power in the legs, almost completely gone soon after entry, had begun to return, while the voice had come up from a whisper to a moderately normal one. The appetite remained good. As his strength gradually increased he was put on graded orthopedic exercises.

In August, 1929, four months after beginning the yeast powder, the patient had gained a little weight, was stronger, and although he tired easily, was walking about a little with the aid of braces. He had an uncertain tabetic type of gait, though tests of position sense in the feet were performed fairly well. The latter were still held in a position of equinovarus due to the very weak peroneal groups. He was having daily bowel movements without cathartics or enemas. The pulse rate had fallen from 100 to 80. The stools were pale yellow, pasty and microscopically well digested, excepting for moderate quantities of fatty acids and soaps.

He was discharged home in August, 1929, on a generous mixed diet plus four teaspoonfuls of brewer's yeast concentrate and four vials of Lilly's liver extract No. 343 daily. At home there was gradual improvement in weight, strength and muscle tone to an extent that it was finally considered feasible to attempt to restore the normal bowel sequence.

The patient was re-admitted to the hospital in November, 1929, and, after three blood transfusions, operation was performed. Adhesions involving the entire small bowel were systematically freed. A huge dilated jejunum was found to connect at about its mid-portion with the terminal ileum. This had left perhaps twenty-four inches of functioning small intestine. The entero-enterostomy was disconnected. Fifty cubic centimeters of amniotic fluid were put into the abdominal cavity before it was closed.

At once fatty elements and muscle fibers disappeared from the stools.

Steady general improvement followed and by the end of six months he was leading a fairly active life.

When examined in August, 1932, two and one half years after his final operation he was feeling "fit as a king" and could do a full day's work at a carpenter's bench or play thirty-six holes of golf without undue fatigue. There was no cardiac symptom. His appetite and digestion were excellent and his bowels were moving normally once a day. He felt that his voice had never quite come back to its full strength and former character. His feet were still somewhat troublesome, certainly his greatest handicap, for though he walked without fatigue there was still some uncertainty, and a fear that he might trip. The soles of the feet felt as though they were "all tendons".

Physical examination showed him lean, tanned and apparently very well. His weight was 146 stripped. The heart was not enlarged to percussion. It was regular, had normal sounds and a rate of 68. The blood pressure was 125/60 recumbent and 125/65 sitting. The patient walked with his feet somewhat apart, toeing out and "slapping" slightly. There was some little difficulty in walking a line and perhaps a slightly positive Romberg test. The deep reflexes in the arms were present; they were sluggish on the left. Those in the legs, on both sides, were barely obtained with reinforcement. The plantars gave a faint normal response. The abdominal reflexes were present. The cremasterics were absent. Vibration sense was present but diminished in both legs. Tactile and pain sensations were normal all over. Position sense in the fingers and toes was normal and heel to knee and finger to nose tests were performed accurately.

In September, 1932, the stone in the right kidney was successfully removed through the lumbar route. Convalescence from this operation was uneventful.

COMMENT

There is little room for doubt that this patient had beriberi. The nerve manifestations, including the virtual aphonia presumably due to tenth nerve involvement, the cardiac symptoms with the absence of evidence of other types of heart disease and lack of response to digitalis, and the edema, were all quite typical. Constipation, usually present in this disease, developed despite the underlying tendency to diarrhea. However, anorexia, also to be expected, never supervened on the ravenous appetite which began immediately after his enterostomy in 1926.

The improvement which started with the addition of yeast to his diet and which became rapid after his normal bowel sequence had been reëstablished suggests definitely that the patient's difficulty was primarily a deficiency of a yeast-contained substance and that this deficiency was dependent chiefly, if not solely, on a lack of adequate absorptive area in the intestines.

It is interesting to note how the acute infection in the winter of 1929 greatly accentuated the deficiency manifestations, apparently a characteristic of all syndromes resulting from avitaminosis.

In the spring of 1929 the absence of lipase on duodenal analysis, the decreased sugar tolerance, the steatorrhea, and perhaps also the epigastric pain, pointed to definite pancreatic involvement which, though an ordinary pancreatitis could not be entirely ruled out, was probably further evidence of avitaminosis. It is of interest to recall the work of Lepkovsky, Wood and Evans[9], who found in rats on diets

deficient in the anti-neuritic vitamin, some decrease in the glucose tolerance as the final breakdown was reached.

The animal experiments of Osborne and Mendel[10], Fujimaki[11], and McCarrison[12], give occasion for conjecture concerning the part played by lack of fat soluble vitamin in the formation of the renal stones discovered in our patient about six months after operation. It seems reasonable to suppose that due to his fat intolerance he absorbed very little of vitamin A even though he gave no other manifestations of such a deficiency.

SUMMARY

Typical beriberi developed gradually following an entero-enterostomy for relief of acute postoperative intestinal obstruction. Definite improvement followed the administration of large doses of dried yeast, but permanent and virtually complete relief did not come until a large blind loop of small intestine was restored to its normal sequence.

Renal stones which developed during the period of short-circuited bowel may have been the result of a gross failure to absorb vitamin A.

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OXYGEN THERAPY BY THE OPEN BOX METHOD*

BY ALEX M. BURGESS, M.D.,† ASA S. BRIGGS, M.D.,† AND ALEX M. BURGESS, JR.†

THE therapeutic use of oxygen has become so important, especially in the treatment of pulmonary and cardiac disease, that any method which increases the ease and efficiency of its application or decreases its cost is worthy of consideration. At present the methods available to the practitioner and to the smaller hospitals are not as a rule satisfactory. The modern tent, which is efficient, is also expensive and cumbersome, and the portable oxygen room, while more efficient, is also still more expensive and cumbersome and hardly appropriate for the use of the crossroads doctor or rural hospital.

In a preliminary note published recently[1], two of us have described a method of administration based on a new principle. This principle is, stated in its simplest terms, the fact that when oxygen, which is slightly heavier than air, is introduced at a reasonable speed into the bottom of a container which is impermeable as to its walls and floor but open at the top, there will be maintained in the lower part of the container an atmosphere relatively rich in oxygen in spite of free diffusion upwards. Using car board boxes of various sizes we showed tha the concentration of oxygen‡ at a given level in the box varied directly with the speed of oxygen inflow and depth of the box and inversely with its capacity. In a box 19½ x 13¾ x 18½ in. in depth, for example, with an inflow of four litres per minute, we found at a point six inches above the floor of the box a constant concentration of over 70 per cent oxygen. In order to apply a box of this general description to a patient it was necessary to devise a leak-proof curtain through which the patient's head could protrude into the box. The curtain mentioned in the preliminary note has since been discarded for the one which is described below. It was, however, sufficiently efficient to accomplish its main purpose and we were able to show that normal individuals and several patients on whom the apparatus was tested could be made to breathe concentration of 40 to 50 per cent oxygen by the use of this box and with oxygen inflow of four to five litres per minute. We had, at that time, not yet developed an adequate method of controlling humidity and temperature within the box. Our object in publishing the preliminary note was to make known the principle to others interested in the subject who might be able to perfect the method.

The present communication deals with our further modifications of the apparatus and clinical application of the method. With the adoption of a more efficient curtain and the development of an ice cooler which gives adequate control of humidity and temperature[2], we have found the apparatus to be applicable to

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‡Yandell Henderson syringe method used in gas analyses.

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many patients needing oxygen therapy over long periods.

DESCRIPTION OF APPARATUS

At present we are using two types of apparatus. The first (figs. 1 & 2) is intended to contain an adult patient's head or the head, thorax and arms of an infant. It consists of a wooden box measuring 20 x 20 x 18 inches of which the top is open and the bottom and lower two-thirds of the front wall are also left open and covered with a rubber curtain as shown in the diagram (fig. 1). This rubber curtain is attached by metal clamps to the inside of the box along the side walls and across the back wall thus forming an elastic impermeable floor to the box, and up on either side of the opening in the front wall. In the lower part of the curtain which, when attached, completes the front wall

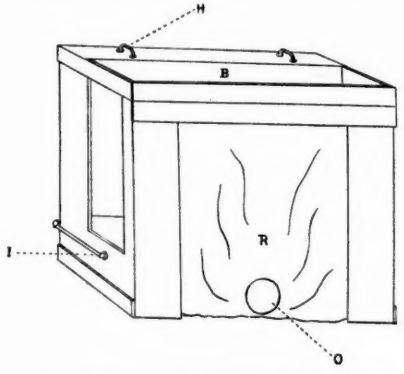

FIG. 1. Diagram of box.
R = Rubber curtain.
O = Opening for patient's head.
B = "Baffle plate."
H = Handle for raising baffle plate.
I = Oxygen intake tube.

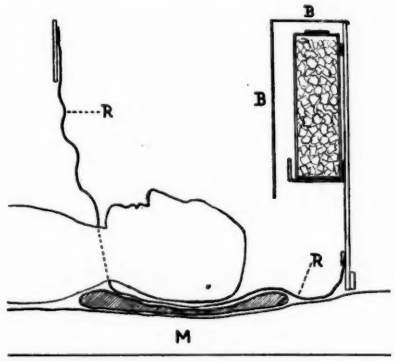

FIG. 2. Diagram representing sagittal section of box in use.
R = Rubber curtain.
B = Baffle plate covering ice container.
M = Mattress.

of the box is a hole for admitting the patient's head. The hole is three, four or five inches in diameter in different curtains and in use the proper curtain is chosen to fit the patient's neck or infant's abdomen as the case may be. The curtains are made of rubber such as is used in making surgeon's gloves and the hole is easily stretched to go over the patient's head, and fits snugly around the neck without unpleasant constriction. In use the part of the curtain which forms the floor is covered with a folded sheet or very thin pillow.

The sides of the box contain windows of cellulose acetate. Below these windows are the openings of the oxygen inflow tubes. Below the oxygen inflow openings are the clamps for attaching the rubber curtain as noted above. The back wall of the box is without a window and to it the ice cooler is attached. The ice cooler consists of a metal box which fits into a metal outer frame whose bottom part acts as a tray to receive the drip as moisture condenses on the cold surface of the cooler. Over this cooler and fitting snugly to the edges of the box is a "baffle plate" or metal cover which extends down in front of the cooler to within about two inches of its bottom and leaves a space of about two inches between it and the front of the cooler. This prevents outside air from coming in contact with the cooler and forming a downward current into the box which would tend to drive out oxygen-rich air and destroy the efficiency of the apparatus as explained below. It has been found that a cooler made of wire mesh with a tray below it which drains through a pipe to the outside is also a very good type of cooler, probably even more efficient than the one described. Furthermore for the "baffle plate" or metal cover a rubberized cloth cover may be substituted.

By means of the cooling apparatus described it was found possible to keep the temperature and humidity inside the box at or below room temperature and room humidity. When the cooler was first tried without the cover it was discovered that although temperature and humidity were well controlled the oxygen percentage at the level of the patient's nose was, at an inflow of 5 litres per minute, constantly below 40 per cent. This is illustrated in figure 3 in which the variations in oxygen percentage, temperature and humidity are charted both with and without the use of the uncovered cooler. This result we judged to be due to the creation of a downward current of outside air, as mentioned above, which tended to drive out the oxygen-rich air from the lower layers of the box. The cover was devised to prevent this and allow only oxygen-rich air to come in contact with the cooler. This is illustrated graphically by figure 4. When the cooler was used with the cover it was found possible to obtain good therapeutic concentrations of oxygen (45 to 65 per cent) at the level of the patient's nose with, at the same time, adequate temperature and humidity control. This is shown in figure 5. Figure 6 illustrates the importance of minute leaks, and also shows carbon dioxid values obtained in a three hour test of the box.

The second type of box in use is the larger box intended to contain an entire infant. These

vary somewhat in length but are 18 inches deep and fitted at one end with a cooler and cover such as has been described above. The oxygen intake tubes are located in the side walls near the bottom of the box and about 8 inches from the end of the box which contains the cooler. The bottom of the box is made of impermeable rubberized cloth. As the entire patient is to be contained in the box, of course no curtain is necessary and leaks cannot occur. This type of apparatus is preferred by some of the local pediatrists who are using these boxes in their routine clinical work. It is slightly less efficient than the other type but has been giving very satisfactory results on the pediatric service at the Rhode Island Hospital during the past winter. In a number of instances cyanotic, apparently moribund babies have been placed in these boxes and have shown prompt improvement and eventual recovery. With a flow of five to six litres per minute the infant in these boxes has been shown to receive from forty to sixty per cent oxygen.

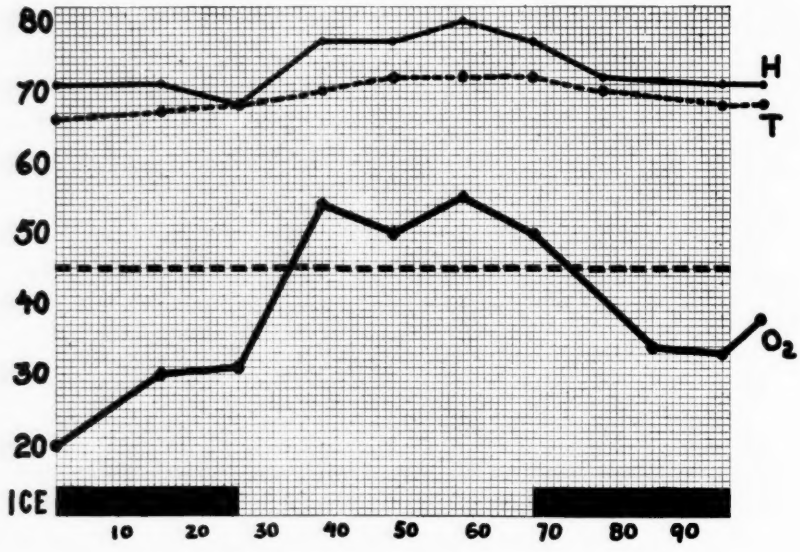

FIG. 3. Chart showing effect of uncovered ice cooler on humidity, temperature and oxygen concentration in box when in use on a patient. All air samples taken at bridge of patient's nose. Rate of oxygen inflow 5 litres per minute. Time in minutes.

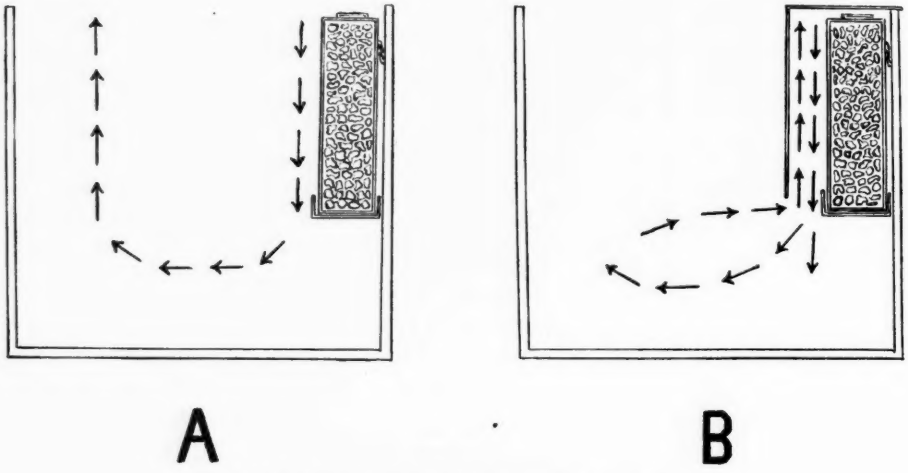

FIG. 4. Diagram illustrating the probable effect of the ice cooler on air currents in the box. A—without cover. B—with cover.

CLINICAL EXPERIENCE WITH THE METHOD

As regards the clinical use of the first type of box described, the "head box" as it is usually called, we have seen the same striking results as are obtained by any efficient method of oxygen administration. Our experience has been for the most part limited to its use in pneumonia and cardiac disease. When we compare it with other methods we find that in adults it is sometimes better tolerated than the tent and sometimes better than the nasal catheter. It has the advantage over the tent that feeding and

treatment can be given freely through the top without interfering with the apparatus at all while physical examination of the chest and the rest of the body as well as sponging, the slant of the patient's trunk and the top is raised too high from the floor to allow of easy access to the patient's face for feeding and treatment unless the whole bed can be lowered.

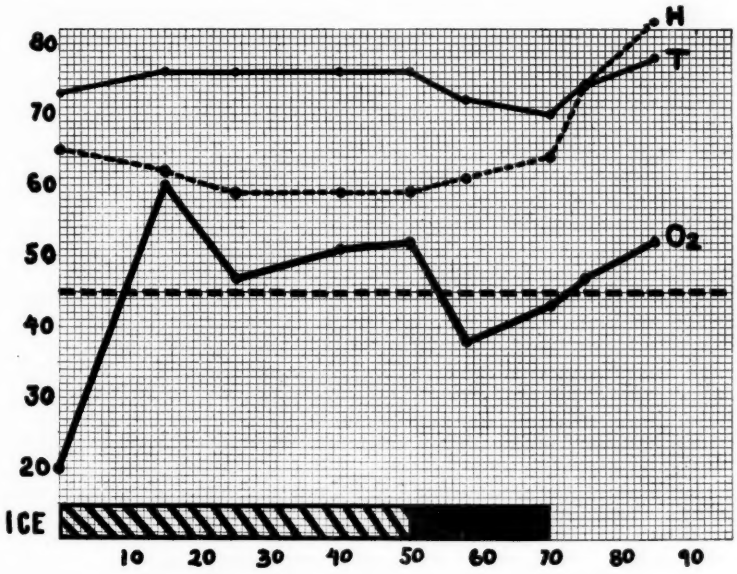

FIG. 5. Chart showing effect of cover over ice cooler on oxygen percentage, temperature and humidity. The cross-hatched block represents time when ice cooler was in use with cover, solid block when it was used without cover and during the remainder of the test the cooler was removed. Rate of oxygen flow—5 litres per minute. Time in minutes.

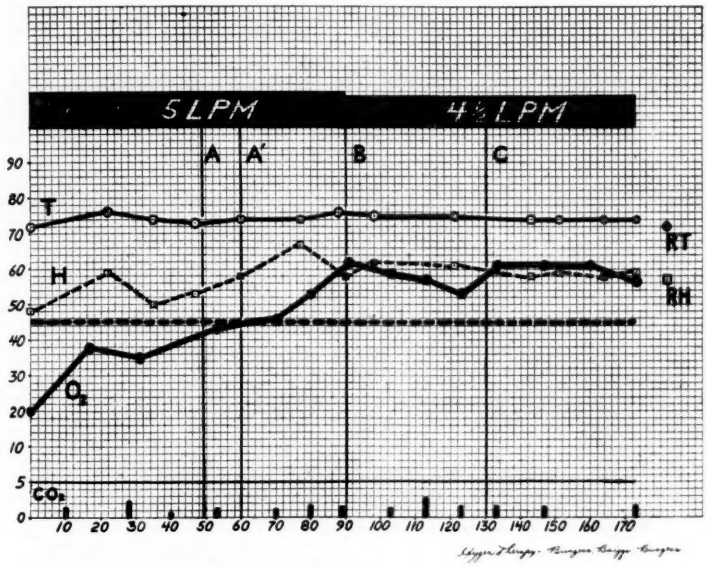

FIG. 6. Chart showing 3-hour test of box on a normal adult illustrating importance of small leaks on oxygen concentration and also showing CO2 values—Flow 5 and later 4½ litres per minute. Time in minutes.
A and A' = Time when small leaks in attachment of curtain were discovered and stopped.
B = Change in rate of oxygen inflow.
C = Aperture of box half covered by a cloth.
R. T. and R. H. = Room temperature and room humidity at end of test.

enemata, etc., can be carried out also without any interruption of the treatment. In patients who are markedly orthopneic it is usually inferior to either of the other methods mentioned as the whole apparatus has to be adjusted to In some instances, however, after treatment had been begun by another method the patient later could lie more nearly flat and the box proved to be superior for the latter part of his oxygen treatment.

In children and in infants we consider the use of the box to be the method of choice and superior to the other methods which we have had an opportunity to study. For the Providence Lying-In Hospital a very small box has been constructed for premature infants which gives strikingly satisfactory results.

During the first six months of the year 1933 the method was used in about sixty cases in Providence. At the Rhode Island Hospital the head box was used on adults and children while in the case of infants the larger box was employed. The box method has also been in use at the Charles V. Chapin and Lying-In Hospitals, and in the private practice of several physicians.

In adults the method has been successfully applied to a number of cases of pneumonia with cyanosis. Of the few patients with heart disease in which it has been used the following notes give a striking example:

M. C. 66 years. Female. Unmarried—housekeeper. Family history and past history irrelevant except that she is said to have had a definite arterial hypertension and a slight glycosuria.

She was admitted to the Rhode Island Hospital on February 20, 1933 in a comatose condition. A history obtained later showed that while on the way to church she was taken with a sudden smothering sensation and dyspnea. On admission within an hour of the onset she was found to be very cyanotic, this being especially evident in her lips, fingers and ear lobes. Pupils were normal. The lungs showed crackling râles in both axillae and were not examined in back. Blood pressure was not obtainable. Heart sounds were practically inaudible.

Following admission cyanosis became more marked and respirations periodic. She was given coramine 1 cc., adrenalin 0.65 cc. and caffeine sodium benzoate 0.5 gram subcutaneously. When seen by one of the writers about one and a half hours later she was deeply cyanotic and pulseless at the wrist and appeared moribund.

She was placed in the oxygen box with the flow begun at seven litres per minute and later reduced to five. At the end of three hours her color was normal, her pulse good and her heart sounds regular and of fair quality.

An electrocardiogram suggested coronary occlusion. After a long and rather difficult convalescence in which a second coronary episode occurred with the appearance of a pericardial friction rub the patient was discharged from the hospital on May 25, 1933.

In using the method in infants and children many very striking results have been recorded including the recovery of several apparently moribund patients suffering from pneumonia. The case of a little girl seen by Dr. H. E. Utter in consultation in the country is not only a very good example of the use of the method but also of its applicability to patients in rural communities where more expensive and elaborate apparatus is not available. This child of five had been ill for several days and when seen by him showed evidence of a bilateral bronchopneumonia. She was cyanotic and restless and had had almost no sleep for several days. Both family physician and consultant considered the prognosis as extremely bad. An oxygen box of the "head-box" type was obtained. Five minutes after the patient was put in the box she was asleep and her color, respirations and pulse rate was noticeably improved. She was kept in the box for thirteen days and made a perfect recovery.

At the Providence Lying-In Hospital the method has become routine for premature infants and has been used in more than thirty cases. Three of these[3] are to be reported by Dr. W. P. Buffum, Jr. The small box which has been constructed for this work takes the entire infant and requires a flow of but 1½ litres per minute to give the required oxygen percentage. (Fig. 7.)

FIG. 7. Small box used for premature infants. (Courtesy of Providence Lying-In Hospital.)

If, as seems likely, further experience corroborates our early impressions of the use of this method it will doubtless be possible so to modify the apparatus that its convenience and efficiency will be greatly enhanced. Furthermore, in the construction of the larger tents it seems to us probable that by applying the same principle exemplified in the box which we have described, that is, by making the bottom leakproof by an impermeable rubber curtain through an opening in which the patient's body projects into the tent, and by having all openings of the tent high enough to prevent escape of the oxygen-rich air of the lower levels, a much greater efficiency could be obtained.

SUMMARY

1. A new method of oxygen therapy is described based on the principle that if oxygen is introduced at a reasonable speed into a box with impermeable walls and floor but with the top open, a high concentration will be maintained in the lower part of the box despite free diffusion upwards.

2. A cheap and easily constructed apparatus for applying this method is described.

3. By the use of this apparatus patients

can be made to receive from 40 to 65 per cent oxygen with a flow of four to five litres per minute, and adequate control of temperature and humidity is obtained.

4. Clinical experience with the method shows that it is efficient in adults though not always the method of choice. In infants and children it has proved, in the hands of the writers, superior to all other methods used.

5. The simplicity of the method and the inexpensiveness of the apparatus make it especially appropriate for the use of general practitioners and small hospitals.

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2 Burgess, Alexander M., and Burgess, Alexander M., Jr.: The administration of oxygen according to a new principle. Current Researches in Anesthesia and Analgesia. 12:220 (Sept.-Oct.) 1933.

3 To be published.

FOUR SYNCHRONOUS CANCERS OF THE SMALL INTESTINE

A Case Report

BY J. F. BALDWIN, M.D.*

IN the *New England Journal of Medicine* of May 18, 1933, Dr. Everett D. Kiefer, of the Lahey Clinic, Boston, published an interesting paper, based largely on the Clinic records, on the subject of "Tumors of the Small Intestine." From this paper it seemed that while malignant tumors of the small intestines are relatively exceedingly rare, no case of multiple malignancies had apparently been recorded. His statement seemed to be fully verified in the chapter on Cancer of the Intestines in the work on *Cancer* edited by Herbert J. Paterson, with a Preface by John Bland-Sutton, published by William Wood & Company in 1925. Because of the apparent rarity of cases of multiplicity of cancer, the following brief report may be worth recording:

W. H. R., Versailles, Ohio; aged 59; Nov. 20, 1909. Patient, an active physician, had always enjoyed good health but had been ailing for eight or nine weeks, the trouble following a hearty dinner apparently as an acute attack of indigestion. The discomfort had been persistent in the region of the cecum, but he still had a good appetite; no vomiting. His bowels were very much constipated, only moving as the result of physic. He had lost 25 pounds in weight, had a slight daily elevation of temperature and had not felt like doing any work, though he had not entirely given up.

Examination showed a little abdominal distention, with considerable rigidity on the right side; quite typical tenderness over the general region of the appendix; none over the gall-bladder. My notes read: "The case is very suggestive of a chronic, or rather subacute, appendicitis, but malignancy cannot be positively excluded. As the pain comes on one-half hour to an hour after meals, there is a possibility of trouble in the duodenum, but the symptoms are not characteristic."

I referred him at once to one of our leading gastro-enterologists, Dr. J. D. Dunham, who reported that in addition to chronic appendicitis he thought the patient suffered from an ulcer in the pylorus with beginning stenosis. In view of the rapid loss of weight and strength he also suspected malignancy.

When the patient was relaxed under the anesthetic, thorough study of the abdomen failed to reveal anything new. The usual right rectus incision was made. The intestines were moderately distended, but nothing unusual appeared until the cecum was reached. It was then found that immediately above the ileocecal valve there were three distinct cancers, each essentially spherical and about one inch in diameter, all three within two feet so that a resection of the bowel removed all three. The usual lateral anastomosis was made. Running the bowel through the fingers disclosed a fourth cancer a few inches below the upper end of the jejunum. That portion of the bowel was resected and a lateral anastomosis made. General exploration failed to show any further evidence of disease. Of the four growths one of those in the lower end of the ileum was somewhat smaller than the others; all of them involved the wall of the bowel, each one materially narrowing its lumen. The specimens were referred to Dr. J. J. Coons, who later reported "Spheroidal-celled cancer, undergoing some form of degeneration, probably mucoid."

The patient made a smooth convalescence, improved rapidly and resumed his active practice. Early in 1911, he commenced having trouble in the upper end of the esophagus, and I saw him at his home March 12, 1911. He was then in bad shape from esophageal obstruction, with marked involvement of the glands of the neck. A superficial piece of tissue in the throat had been removed, but had not been examined. There was *no trouble in the abdomen.* Another bit of tissue was removed for microscopic study and referred to the microscopist who had examined the original tumors. He soon reported as to the identity of all, and approved of the suggestion that the esophageal growth was primary and the others grafts from the lodgment of detached pieces.

The patient died May 22, 1911, eighteen months after his operation. There was no autopsy.

*Baldwin—Formerly Chancellor and Professor of Surgical Gynecology, Ohio Medical University. For record and address of author see "This Week's Issue," page 276.

MEDICAL PROGRESS

PROGRESS IN TUBERCULOSIS 1932-1933

BY JOHN B. HAWES, 2ND, M.D.,* AND MOSES J. STONE, M.D.*

DIAGNOSIS

THERE has been no outstanding advance in the diagnosis of pulmonary tuberculosis but one cannot but notice with relief that the difference of opinion between clinician and roentgenologist is becoming less and less as time goes on.

L. Brown, *Am. J. Med. Sc.*, 182:700 (Nov.) 1931, presents a study of 503 cases of pulmonary tuberculosis, each of which presented no definite or at least none of the physical signs. He emphasizes the importance of roentgen ray diagnosis in these cases.

R. Hollman, *Klin. Wchnschr.*, 10:2359 (Dec. 19) 1931, examined a total of 2,677 patients who were diagnosed by general practitioners as having tuberculosis or some other chronic pulmonary disease. He reëxamined them with particular emphasis to roentgenological studies. Only 48 per cent of all the patients diagnosed as pulmonary tuberculosis actually had that disease; of 1,053 cases with a definite diagnosis 35 per cent had pulmonary tuberculosis and of 846 patients in whom tuberculosis was not suspected, nine per cent had tuberculosis. He emphasizes the necessity of roentgenological examination in all pulmonary patients.

R. M. Burke, *Minn. Med.*, 15:18 (Jan.) 1932, found that of 2,096 patients admitted to the Glen Lake Sanatorium, 74 on examination proved not to have tuberculosis, 23 apparently normal, 29 having miscellaneous non-pulmonary conditions and 22 non-tuberculous pulmonary disease. In the second group the following diseases were represented; heart disease eight cases, intestinal disorders, five, syphilis, four, upper respiratory infections, four, carcinoma, two, arthritis, two, Hodgkin's disease, one, hyperthyroidism, one, actinomycosis, one, pregnancy, one. Non-tuberculous pulmonary infections were found as follows: bronchiectasis, 11, bronchitis, five, pulmonary abscess, two, asthma, one, empyema, one, blastomycosis, one, pulmonary fibrosis, one. In the group of non-tuberculous disease the most prevalent symptoms in the order of their frequency were tiredness or weakness, cough, slight elevation of temperature, chest pain, hemoptysis, abnormal x-ray shadows in the lung, loss of weight, night sweats, frequent colds and bronchitis.

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Braeuning, *Klin. Wchnschr.*, 11:401 (Mar. 5) 1932, emphasizes that practically all clinical tuberculous disease is preceded by an asymptomatic period during which, however, x-ray evidence of the disease is present. He therefore urges that no health certificate should be granted without x-ray examination.

TREATMENT

The outstanding advance in the treatment of tuberculosis has been the general acceptance of surgical measures by means of pneumothorax phrenic nerve operation and thoracoplasty by the medical profession and particularly by those in charge of hospitals and sanatoria for the tuberculous. This alone is a tremendous step in advance.

R. Massingham, *Lancet*, 2:757 (Oct. 3) 1931, takes up the treatment of advanced pulmonary tuberculosis. He states that treatment of these cases is a psychological as well as a physical problem and that the "spes phthisica" must be kept alive. Relief of trivial symptoms is often possible and distracts the patient's mind from the hopelessness of his situation. He found that insomnia due to dyspnea and cough may be relieved by ½ gr. of ephedrine combined with a bromide mixture and taken at bed time. Hot milk, night and morning, shortens attacks of coughing when the sputum is profuse. A mixture of 15 gr. of sodium bicarbonate, 5 gr. of sodium chloride and 10 minims of spirit of chloroform in hot water also aids expectoration. Early stages of laryngitis should be treated by the direct cautery. Later, nerve-section or injection may be used. Silence is important. Benzoin inhalations are soothing. He recommends a mixture of equal parts of orthoform, anaesthesine and lactose for local anesthesia. If hypnotics are used he feels that it is wise to use a dose sufficient to produce sleep. Bromide, chloral hydrate and Dover's powder are recommended. Pain in the chest is treated with counterirritants. Strapping is usually impractical because of dyspnea. Terminal enteritis he treats by a reduced diet of low residue, opiates and bismuth. Cod liver oil and tomato juice are worthy of trial. He treats anorexia with a mixture of hydrochloric acid, strychnine and gentian. The aim of treatment should be to promote the comfort and happiness of the patient.

It is strange that he does not mention ultraviolet light for this.

J. Watt, *J. State Med.*, 39:311 (June) 1931, emphasizes that the sanatorium forms the keystone in the whole system of treatment of tuberculosis. But the most efficient utilization of the sanatorium demands that patients be allowed to stay only so long as they receive considerable benefit. Having learned the sanatorium methods they should be allowed to continue their treatment at home and be subsidized if necessary. He believes this to be more economical than carrying the patient on the sanatorium list indefinitely.

S. A. Knopf, *J. A. M. A.*, 96:2023 (June 13) 1931, discussing the rôle of climate in tuberculosis states that when the sanatorium regimen can be conscientiously carried out whether in an institution or at home, climatic conditions are of secondary importance, but to deny the beneficial influence of certain climatic regions as a valuable adjuvant to the treatment of tuberculosis is as dangerous and unscientific as the belief in the specific curative quality of any particular climate. He feels that the ideal climate for the average patient with pulmonary tuberculosis in the earlier and more hopeful stages of the disease, is the one in which the extremes of temperature are not great, with only rare fogs, or none at all, with the purest possible atmosphere, with relatively little humidity, with much sunshine and with all conditions that permit the patient to live comfortably outdoors the greatest number of days of the year and the greatest number of hours of the twenty-four.

P. H. Ringer, *J. A. M. A.*, 97:381 (Aug. 8) 1931, takes up the question of home vs. institutional treatment of tuberculosis. He feels that the patient is best cared for in an institution especially conducted for the treatment of this disease and in the majority of instances, at an appreciable distance from his home. In a few cases home treatment will work; in the majority of cases it will not. He finds that the patient taking the cure at home may obtain bodily quiet, but is constantly subject to three sources of irritation and disturbance; family, friends and business. Again a patient leaving home for treatment is filled with a purpose. The "*esprit de corps*" of a properly run institution is a factor that rarely exists in the home. It is a form of mass psychology as compared with individual psychology.

P. Beeh, *Ztschr. f. Tuberk.*, 58:235, 1930, gives the results of pneumothorax treatment in patients in whom it was successful and compares with results in patients in whom for various reasons it could not be instituted. Of the first group 38.5 per cent improved, 22.5 per cent unchanged and 39.5 per cent worse or died, while of the group without pneumothorax eight per cent improved, 33 per cent remained unchanged and 59 per cent became worse or died.

W. Sachs, *Beitr. z. Klin. d. Tuberk.*, 74:302, 1930, reports his experience with pneumothorax during the years 1920 to 1928 with 649 sanatorium patients. His results during the same period with non-treated cases, especially those in which pneumothorax could not be done show the advantages of compression treatment over conservative treatment, especially as to duration of life, ability to work and loss of bacilli. He also compares artificial pneumothorax treatment with phrenic exeresis and thoracoplasty. During the period of from two to ten years after treatment with pneumothorax, 8.1 per cent died, while of those who had had phrenic exeresis 13 per cent, and those with thoracoplasty 19.4 per cent died; healing or improvement resulted in 81.7 per cent with pneumothorax, 66.6 per cent with phrenic exeresis, and 77.9 per cent with thoracoplasty. No improvement was noted in 10.2 per cent of pneumothorax, 13.7 per cent of phrenic exeresis, and 2.7 per cent of thoracoplasty. He concludes that each of the three procedures has its indications.

Such comparisons as to the value of these three procedures we believe to be of very little importance.

H. Fechter, *Ztschr. f. Tuberk.*, 58:385, 1930, observed that new foci on the contralateral side during pneumothorax treatment may appear very suddenly after a period of rest or improvement. He feels that the commonest source of such infection is hematogenous. He concludes that the treatment of the contralateral infiltration under such circumstances is immediate pneumothorax. The duration of collapse treatment may be markedly shortened if this is done at once.

L. Kogan, *Ztschr. f. Tuberk.*, 57:173, 1930, discusses the ambulant treatment of tuberculosis by means of artificial pneumothorax and believes the results so obtained are as good as those with sanatorium treatment. He recommends it especially in communities where social conditions are poorly organized to deal with cases in any other manner.

O. Neuburger, *Ztschr. f. Tuberk.*, 57:232, 1930, reports 122 cases of pneumothorax during the period of 1925-1929 in which especially good results were attained. Among 90.7 per cent with open tuberculosis 41.9 per cent were free from bacilli following pneumothorax treatment. Following an average sanatorium stay of 4.7 months, 80.2 per cent were discharged as able to work as compared to 59.8 per cent without pneumothorax. After 1-5 years 61.6 per cent of the pneumothorax patients were still able to work.

W. Sachs, *Beitr. z. Klin. d. Tuberk.*, 74:284, 1930, basing his opinion on results in 107 cases

of phrenic exeresis believes that this procedure has a very definite place in the treatment of pulmonary tuberculosis. He warns, however, that its effect in eliminating bacilli from the sputum and in closing cavities must not be overvalued.

M. Ardizzone, *Tubercolosi*, 23:389 (Nov.) 1931, gives the following indications for phrenicectomy; ulcerative and infiltrative lesions in the bases, basilar bronchiectasis, basal abscess of the lung, fistulous empyema and cases in which artificial pneumothorax could not be done. It is sometimes of great help in lesions around the hilum and in the middle lobe. He feels that in bilateral lesions the operation may be used with more freedom than artificial pneumothorax.

H. Els, *Centralbl. Chr.*, 57:2228, 1930, verifying experiments on monkeys that indicated the lack of danger in combined phrenic exeresis and scaleniotomy at one operation, found that a drop of the first and second ribs and a decided decrease in the upper pulmonary areas occurred. The results in 12 cases were better than those in simple phrenic exeresis. He feels that phrenic exeresis should be reinforced by scaleniotomy in upper lobe processes when pneumothorax is not indicated or is impossible, when pneumothorax exists with string-like adhesions and cavities, or with large adhesions, when there is insufficient shrinking of the upper pulmonary region, and finally even when thoracoplasty has been done.

We believe that it is only in very rare instances that this operation is necessary or advisable.

Kochs, Els, and Junkersdorf, *Beitr. z. Klin. d. Tuberk.*, 75:772, 1930, found the vital capacity diminished further upon combined phrenic exeresis and scaleniotomy. Cases suitable for operation are those in which there is disease of the upper long portions. Contraindications for the operation are the same as those for simple exeresis.

W. Sachs, *Beitr. z. Klin. d. Tuberk.*, 74:204, 1930, discusses the open and closed method of pneumolysis. The author does not agree with Sauerbruch that adhesions can be severed better surgically with the open method after thoracotomy.

He is in accord with the vast majority of authorities on this subject.

G. Maurer, *Beitr. z. Klin. d. Tuberk.*, 76:9, 1930, discusses closed pneumolysis. He feels that serous exudates or empyemata are not always contraindications to this operation. Two hundred and fifty-three of his 460 cases were freed from bacilli in the sputum within 4.4 months. He found that in order to sever an adhesion the size of the transverse section is not so important as the composition of the adhesion itself. The anatomical relation of the adhesions to the various large blood vessels is an important consideration. Of 160 cautery operations there were only two complicated with empyema. The mortality was nil.

A. Heymer, *Ztschr. f. Tuberk.*, 59:37, 1930, reports 200 cauterizations of adhesions resulting in good collapse in 51.9 per cent of cases. In all his cases there was not one with dangerous intrathoracic hemorrhage.

H. Ulrici, *Klin. Wchnschr.*, 11:643 (April 9) 1932, presents the final results of the various methods used in collapse therapy. His results are based on whether or not the sputum became negative. According to this criterion the satisfactory results of unilateral pneumothorax have increased in the author's hands from 18 per cent in 1918-1921 to 47 per cent in 1926-1928. Of 72 patients who were treated with bilateral pneumothorax 36 per cent were rendered bacilli free, while phrenicectomy as an independent operation produced the same results in 18 per cent. Following thoracoplasty 38.5 per cent of the patients lost their bacilli. He concludes that collapse treatment will produce a permanent cure in about 25 per cent of patients with open pulmonary tuberculosis. About 20 per cent are restored to complete working capacity. He adds that the results of collapse therapy will be improved by earlier diagnosis and operation and by more prolonged treatment.

H. Lilienthal, *Am. J. Surg.*, 45:356 (Oct.) 1931, gives the following procedures that should be employed by the thoracic surgeon to obtain rest or removal of diseased parts, (1) interruption of phrenic innervation, (2) artificial pneumothorax, (3) thoracoplasty, (4) apical extrapleural compression, (5) direct drainage, and (6) pneumonectomy. Contraindications for surgical procedures in tuberculous patients are as follows: (1) the contralateral lung is badly destroyed, (2) the other essential organs of the body are broken down beyond repair, (3) progressive cerebral lesions, (4) advancing cardiovascular disease, (5) progressive nephritis and (6) inoperable neoplasms.

Lilienthal's ideas as to contraindications appear to us to be somewhat naïve. It is only the first that is of fundamental importance.

W. Hebenstreit, *Deutschr. Med. Wchnschr.*, 57:1489 (Aug. 28) 1931, discussing the combined treatment of artificial pneumothorax and phrenicectomy finds that phrenicectomy does not shorten the period of treatment. He feels that phrenicectomy should be employed only when pneumothorax treatment is unsuccessful.

F. B. Trudeau, *J. A. M. A.*, 98:309 (Jan. 23) 1932, finds that phrenicectomy has earned for itself a definite place in phthisiotherapy. The

indications for its use are found largely in unilateral cases, in patients who do not respond well after several months of usual bed-rest treatment, or who have persistent open cavities with positive sputum, or constant cough and expectoration as prominent symptoms. He adds that it is further indicated as a safeguard for those who cannot or will not receive proper treatment after leaving the sanatorium, also in the great majority of cases in which pneumothorax has been tried without success, as well as an adjunct for many pneumothorax cases, also either preceding or following thoracoplasty.

We are firmly of the opinion that it is only in very rare cases that phrenicectomy should be done before trying pneumothorax.

E. H. Rubin, *Amer. Rev. Tuberc.*, 26:516 (Nov.) 1932, points out that the medical treatment of elderly patients with pulmonary tuberculosis is along somewhat different lines than are generally followed in the treatment of young adults. There is greater need for medicinal treatment and there is less need for open air treatment. Rest is necessary only as it affects the circulatory rather than the respiratory system. He doubts whether rest, per se, causes an increase in the healing of the disease in an elderly individual with fibroid or even fibrocaseous pulmonary tuberculosis who has had the condition for many years.

This is eminently sound and sane advice.

J. Head, O. Schlack & J. Marx, *Amer. Rev. Tuberc.*, 26:653 (Dec.) 1932, outline a programme for collapse therapy. According to this, every case of unilateral pulmonary tuberculosis should have either a blocking or extraction of the phrenic nerve. The patient is then treated with bed-rest as seems indicated. If the improvement is not satisfactory, artificial pneumothorax should then be started. If this is impossible or unsatisfactory further bed-rest is prescribed and eventually thoracoplasty. In some instances in which there is extensive early involvement of the better lung, the phrenic nerve is extracted on the worse side and pneumothorax started immediately on the opposite side. In any case in which the sound lung becomes more than minimally involved, pneumothorax is started on this side. They emphasize that this programme is elastic and is still in the experimental stage. They add that collapse therapy should be applied much earlier and much more frequently than is now generally the practice.

This program is distinctly on the radical side.

E. H. Bruns & J. Casper, *Amer. Rev. Tuberc.*, 26:665 (Dec.) 1932, call attention to the fact that unless a thoracoplasty completely obliterates a cavity it has failed in its purpose and the patient, even though improved, may continue to have symptoms of tuberculosis and to be subject to hemorrhage, and further activities of the disease. They recommend unroofing of cavities or a combination of posterior thoracoplasty with pneumolysis to insure the complete closure of cavities.

This likewise is on the radical side.

T. Plieninger, *Beitr. z. Klin. d. Tuberk.*, 80:291 (Aug.) 1932, advises that the treatment of hilum cavities should be first by means of phrenicectomy, and followed by pneumothorax only if necessary. He points out that cavities near the hilum are not much influenced by artificial pneumothorax treatment alone because the larger bronchi prevent a collapse and likewise because of the tension of the diaphragm.

E. Hager and F. Langebeckmann, *Beitr. z. Klin. d. Tuberk.*, 80:419 (Aug.) 1932, take up the question of shifting of the mediastinum in artificial pneumothorax treatment. They find that a marked mediastinal shift may decrease the vital capacity out of proportion to the inflated air. The diagnosis of a shifted mediastinum is made most easily by fluoroscopic examination. On roentgen films the condition may be obscured because the films are usually taken in maximal inspiration and in this position the shift may be less evident than in expiration.

H. C. Ballon, *Am. J. Surg.*, 16:1 (April) 1932, gives the following indications for oleothorax, (1) as an aid to an ineffective pneumothorax, (2) in cases of purulent and non-purulent tuberculous pleurisy, (3) stabilization of the mediastinum preparatory to or as an adjustment to thoracoplasty, (4) substitute for pneumothorax for economic reasons, (5) treatment of bronchiectasis for purposes of compression, (6) some cases of spontaneous pneumothorax, (7) some cases of small bronchopleural fistula, (8) presence of recurrent serous effusions. From his own experience and that of others he believes that oleothorax should be employed for purposes of compression and disinfection only in selected cases when other recognized methods fail.

W. Curschmann, *Beitr. z. Klin. Tuberk.*, 80:37 (May) 1932, points out that success in thoracoplasty is not solely dependent on the length of ribs removed. It is important to remove pieces of proper length according to the individual findings in each case. The resection must always be closely paravertebral, and must always provide sufficient space for the scapula to drop into the costal cage. The writer also emphasizes that if the operation is done in multiple stages the intervals between operations must be brief, not only because of new bone formation, but because pleural scar tissue may prevent proper collapse. He also adds that proper

bandaging of the thorax for eight or ten weeks following the operation is of utmost importance.

I. D. Bronfin & M. Chernyk, *Amer. Rev. Tuberk.*, 26:689 (Dec.) 1932, give a résumé of the value and limitations of phrenicectomy. Phrenicectomy is chiefly applicable in the treatment of predominantly unilateral lesions with little or no cavitation, when pneumothorax is impossible and when a routine sanatorium régime has not been productive of good results. They found that it has also a wide field of usefulness in bilateral cases with a limited contralateral lesion without definite cavitation. Frequently by its means they were able to convert an unsatisfactory pneumothorax into an effective collapse. Likewise they found it of use in empyema complicating artificial pneumothorax. In chronic lesions with bilateral cavitation, associated emphysema and general debility, even when there is major disease on one side with recent lower-lobe involvement phrenicectomy is generally contraindicated.

BILATERAL PNEUMOTHORAX

H. Scholz, *Beitr. z. Klin. d. Tuberk.*, 74:146, 1930, reports on two years' experience with bilateral collapse treatment in 48 patients. In 13 of the cases the interval between the first and second pneumothorax was considerable while in 28 cases the two were performed simultaneously. Phrenic exeresis was combined with pneumothorax in seven cases. Among the 28 cases treated 25 yielded more or less satisfactory results. He stresses the importance of early treatment of the second side.

J. Leitner, *Beitr. z. Klin. d. Tuberk.*, 73:718, 1930, points out that Forlanini attempted bilateral pneumothorax in 1911 and that in subsequent years it has become increasingly valuable. He reports 16 cases, and urges that it be done early in bilateral disease or in disease with progression on the other side in the presence of unilateral pneumothorax.

W. Sachs, and F. Hoth, *Beitr. z. Klin. d. Tuberk.*, 74:191, 1930, have instituted bilateral pneumothorax in 39 cases of which 17 had bilateral cavities, 14 unilateral cavities with disseminated foci or infiltrations on the contralateral side, three bilateral dissemination with widespread disease of the upper pulmonary area, and five unilateral pneumothorax with new focus formation on the contralateral side. They point out that bilateral pneumothorax is contraindicated in old heavy-walled cavities, circulatory disturbances, intestinal tuberculosis, kidney complications, cachexia, and widespread processes throughout both lungs. Of the 39 cases treated 71.8 per cent became free from bacilli and 20.5 per cent from expectoration. Similar processes yielded results in only 11 per cent of the cases without bilateral pneumothorax. They found that the number of pneumothorax exudates in bilateral pneumothorax were fewer than in unilateral pneumothorax.

A. Frisch, *Wien. Klin. Wchnschr.*, 45:470 (April 8) 1932, urges caution in bilateral artificial pneumothorax treatment. The vital capacity should not be below 800-900 cc. at any time during the treatment. One should start on the more affected side and the inflations must be small and should not be given on the same day on both sides. It is frequently observed that one side will show faster resorption of air than the other side. So far as complications are concerned he finds that they are the same as in unilateral pneumothorax. He recommends that reëxpansion should not be allowed until the patient has been free from bacilli for at least 1½ years.

Harms and Grünewald, *Deutsche. Med. Wchnschr.*, 58:4 (Jan. 1) 1932, report 39 patients who have been treated by bilateral compression. Of these four per cent were cured, 43 per cent improved, 25 per cent worse and 28 per cent dead. He adds that such results are not very encouraging although the procedure should be tried whenever it is indicated.

W. C. Pollock and H. P. Marvin, *Amer. Rev. Tuberc.*, 26:709 (Dec.) 1932, review their results of bilateral pneumothorax therapy in 25 cases. As a result of their experience they feel that advanced bilateral pulmonary tuberculosis may be arrested by bilateral pneumothorax. They have been able to eradicate bilateral cavitation and prevent rapid fatal termination from bronchiogenic spread to the contralateral lung by the selective type of compression applied to the more recently involved lung. They also point out that it makes possible the utilization of surgical collapse once precluded because of extensive bilateral disease.

This question of bilateral pneumothorax is of great interest and importance and urgently deserves more trial and study.

PROGNOSIS

H. Jessen, *Beitr. z. Klin. d. Tuberk.*, 73:710, 1930, discusses the prognosis of pulmonary collapse in 416 cases. There were 269 cases of pneumothorax, 51 of phrenic exeresis and 96 cases of thoracoplasty. With pneumothorax the early cases yielded the best results. When adhesions could be destroyed by the Jacobaeus method, the therapeutic results were better. As to thoracoplasty he finds that the best results are to be obtained when the patient is operated before there is marked toxemia. He does not place any value upon phrenic exeresis as a test operation or as an aid, but on the other hand found that phrenic exeresis alone in patients with small upper-lobe cavities gave favor-

able results in 61.2 per cent of his cases and in 71.4 per cent of processes of the lower and middle lobes.

K. Lydtin and R. Linde, *Ztschr. f. Tuberk.*, 56:329, 1930, find that the prognosis of tuberculosis first diagnosed during pregnancy is less favorable than in those cases in which tuberculosis has existed for some time. Collapse therapy in suitable cases is a valuable aid in preventing the progression of the disease.

W. Jullien and A. Wigniolle, *Rev. d. l. Tuberc.*, 13:12 (Jan.) 1930, give their observations of pulmonary tuberculosis after middle age. They found that three facts characterize the course of pulmonary tuberculosis in the age group which was investigated, (1) a generally poor prognosis, (2) a long duration of the illness after the first appearance of symptoms and (3) a preponderance of males. The development of phthisis at ages above forty-five is attributed to a lowering of resistance after many years of intense physical activity and to family worries. They found that thoracoplasty is too grave an operation for the age group above forty-five.

We are not in accord with this last statement.

A. A. Karan, *Amer. Rev. Tuberc.*, 26:571 (Nov.) 1932, summarizes his findings in 538 children admitted to Wallum Lake Sanatorium during a period of 10 years. Seventy-seven or about 14 per cent showed parenchymal tuberculous pulmonary infiltrations of the adult type. In the group were 53 females and 24 males. Sixty-nine or 90 per cent of the patients showed tubercle bacilli in the sputum on at least three different occasions. They found that the prognosis was decidedly less favorable in the age group between 12-15 years of age inclusive. Thirty-three out of the entire group of 77 were known to be in close contact with tuberculous members of their families.

CHILDHOOD TYPE OF TUBERCULOSIS

The recognition and general acceptance by the profession of the childhood type of tuberculosis as a definite clinical entity have been a distinct step in advance. We are now done with such terms, cumbersome and indefinite as "hilum" "tracheo-bronchial gland" and "lung-root" tuberculosis to mention only a few. For this we are greatly indebted to H. D. Chadwick recently of Detroit and now Health Commissioner of Massachusetts.

D. S. Brachman, *Amer. Rev. Tuberc.*, 26:89 (July) 1932, outlines the methods of case findings as followed in the city of Detroit. Briefly it consists of tuberculin testing of all children and adolescents and x-raying the reactors. When the x-ray shows evidence of pathological change or is suspicious a complete physical examination is made including history of symptoms and contact. On the basis of his work in high schools he recommends that all adults particularly those up to the age of 35 should be x-rayed without a preceding tuberculin test and irrespective of whether there are any symptoms or physical signs. He brings out an important point that a negative diagnosis in tuberculosis should not be made without a corroborating negative x-ray.

W. S. Barclay, *Amer. Rev. Tuberc.*, 26:192 (Aug.) 1932, made an intensive study of tuberculosis contacts in families living in Western Canada. He summarizes his findings by saying that tuberculosis is as much an infectious disease as any of the acute exanthemata, but that ultimately it has a far more vital effect on the health, finances and efficiency of the State at large. Investigation of contacts reveals a fruitful field and one which must soon become obligatory. To make adequate provision for this work becomes a new challenge to antituberculosis organizations.

H. D. Chadwick, *Am. J. Roentgenol.*, 27:46 (Jan.) 1932, describes the lesions caused by clinical primary tuberculosis. He finds that it may show, (1) a circumscribed or more diffused infiltration, pneumonic in appearance, varying in extent from a few centimeters in diameter to the involvement of nearly the whole of one lobe of the lung, with or without demonstrable tracheobronchial lymph nodes; (2) a small nodule in the lung with or without visible lymph-node masses in the hilum; (3) circumscribed masses of caseous nodes projecting outward from the mediastinum; (4) masses of calcified tracheobronchial lymph nodes, and no obvious lesion of the lung, and (5) rarely an area of infiltration with rarefied centre due to excavation and usually associated with enlarged uncalcified tracheobronchial lymph nodes. Areas of infiltration of the exudative or productive types associated with calcified pulmonary nodules or tracheobronchial lymph nodes are classified as the adult type of tuberculosis.

C. A. Stewart, *Am. J. Dis. Child.*, 93:803 (April) 1932, evaluating different methods for the detection of childhood tuberculosis comes to the following conclusion. With a value of 100 per cent assigned to the Pirquet test as measuring its efficiency in the discovery of childhood tuberculosis, the roentgen examination has a reliable efficiency of 25 per cent and the physical examination only a small fraction of 1 per cent.

Five or ten years ago no one would have agreed with this statement of Stewart's. At present although most of us would not go so far as he does we are more or less in accord with his opinion.

R. S. Stone and E. Wolff, *Radiology*, 17:940

(Nov.) 1931, find that history, symptoms and physical signs furnish insufficient data to establish a diagnosis of tuberculosis in children. A positive tuberculin reaction merely proves that tuberculous infection is present although the degree of reaction may give some indication of the severity of the lesion. Roentgenographic examination however established a positive diagnosis of intrathoracic tuberculosis in 28 per cent more cases than did purely clinical methods. The percentage of positive x-ray findings was much higher in those cases with the largest tuberculin reactions. He concludes that roentgenograms should be made routinely on all children with a positive tuberculin reaction.

D. J. Dow and W. E. Lloyd, *Brit. M. J.*, 1:701 (April 16) 1932, feel that in attempting to localize the lesion in children who are shown to be tuberculous by a positive tuberculin reaction, the chest radiogram is not so helpful as might have been supposed. The lesions if in the lymph nodes are invisible unless calcified and the majority of such lesions may be extrathoracic. Non-tuberculous infiltration and fibrosis are more common than tuberculosis from which they cannot be differentiated, with certainty. Therefore, while the chest radiogram in children is of great clinical value, it has these definite limitations, and its interpretation in the tuberculin positive child needs the greatest care.

H. Adler, *Beitr. z. Klin. d. Tuberk.*, 80:22 (May) 1932, studying the x-ray pictures and the history as regards former contact and infection in a group of 460 patients with pulmonary tuberculosis comes to the following conclusion: Massive childhood infection seems to predispose to later endogenous reinfections, but to protect against exogenous superinfections. Mild childhood infections lack both the predisposing and the protecting factors.

LABORATORY METHODS

E. Mayer and M. Dworski, *Amer. Rev. Tuberc.*, 26:105 (Aug.) 1932, point out that ultraviolet light has a direct bactericidal effect on bacteria. Tubercle bacilli fixed by heat and then exposed to the rays, showed definite alterations in shape and irregularities in staining. They also found that a preliminary application of heat sensitizes the bacteria, so that they become more susceptible to the destructive action of the rays than do unheated organisms.

J. W. Cutler, *Amer. Rev. Tuberc.*, 26:134 (Aug.) 1932, reports on the results of a study with the sedimentation test in a group of 131 patients receiving artificial pneumothorax treatment. He concludes that the sedimentation test gives valuable information at a time when x-ray findings are obscured and physical signs and symptoms are obliterated by the collapse. He finds that the sedimentation rate is a sensitive measure of the activity of the tuberculous process in the compressed lung. The test will not become normal until the tuberculous process is quiescent in both lungs. This test is simple to perform and to interpret, and by its proper utilization the physician can gather much valuable information. He strongly urges its wider use.

J. Kaminsky and D. L. Davidson, *Amer. Rev. Tuberc.*, 26:282 (Sept.) 1932, give their results of the sedimentation test in a series of 500 cases. They found no relationship between variations in the number of red cells and the sedimentation speed. They found that a low color index accompanies a rapid sedimentation velocity. They conclude that there is a close relation between the activity of the lesion and the sedimentation rate in pulmonary tuberculosis. The group of patients whose sedimentation graphs were horizontal lines, showed the lowest incidence of positive sputa, cavity formation, pulse and temperature elevations and substandard weight. The group of patients whose sedimentation test graphs were vertical curves showed the highest incidence of objective signs of activity. They feel that the sedimentation test is of considerable value as an indicator of activity. A single determination may be of some help in appraising a case of pulmonary tuberculosis while repeated tests may furnish much additional information as to the progress of the case and serve to estimate effectiveness of treatment.

This whole question of the value of the sedimentation test needs further study. We believe it to be of real help.

DIETETIC TREATMENT

E. S. Mariette, *Ann. Int. Med.*, 4:793 (Dec.) 1931, describes the diet which is being used at Glen Lake Sanatorium. This diet provides about 3000 calories a day and includes half a pint of milk with each meal and at bedtime. It contains 70-100 Gm. protein, about 300 Gm. carbohydrate, and the balance in fat. Those who are below weight receive an extra half pint of milk morning and afternoon.

M. Mecklenburg, *Ztschr. f. Tuberk.*, 57:47, 1930, treated 30 cases for a period of seven months with the Herrmannsdorfer diet. This gave no better results than an ordinary diet.

M. G. Schroeder, *J. State Med.* 39:435 (Aug.) 1931, feels that there is no special curative diet for tuberculous patients. In most chronic cases a mixed diet, containing plenty of proteins and fats and sufficient salts and vitamins is indicated. He adds that certain special diets, such as Gerson's, Sauerbruch's and Herrmannsdorfer's probably owe their stimulating effect to the removal of table salt. This type of diet is generally useful only in tuberculosis of skin, and bones and joints. The modified Gerson diet

was found in the author's experience to be insufficiently nourishing and to contain too much liquid food.

H. Starcke, *Beitr. z. Klin. d. Tuberk.*, 74:61, 1930, used the Herrmannsdorfer-Gerson diet in 11 children and youths with pulmonary and surgical tuberculosis. Cod liver oil without phosphorus was given. In spite of the fact that weight increases were obtained, the diet had no effect upon the course of the disease. The favorable action noted is considered to be the result of psychotherapy. He does not recommend the diet for children and youths.

C. Noorden, *Wien. Wchnschr.*, 45:708 (June 3) 1932, holds that the decrease of sodium chloride in the Gerson diet is undoubtedly the therapeutically active principle of the diet. He finds that the therapeutic action of Gerson's diet is uncertain in pulmonary tuberculosis.

Evidence seems to be accumulating that the Gerson-Sauerbruch diet is not of any special benefit in pulmonary tuberculosis.

SANOCRYSIN TREATMENT

S. Christensen, *Tubercle*, 13:49 (Nov.) 1931, treated 438 patients suffering from pulmonary tuberculosis with sanocrysin. It is his impression that sanocrysin causes a shortening of the sanatorium treatment period and a rise in the number of persons "fit for work" following such treatment.

F. E. Koch, *Beitr. z. Klin. d. Tuberk.*, 73:751, 1930, treated a group of 80 cases of tuberculosis with sanocrysin and compared it with 80 control patients classified into mild, moderate, and severe types. Both groups were treated in identical fashion aside from the use of the sanocrysin. Of the sanocrysin cases 65 improved as against only 29 per cent of the control cases. Tubercle bacilli disappeared in 39 of the 78 sanocrysin cases, while of the controls only seven of the 70 showed similar effects. Likewise pyrexia disappeared more rapidly in the sanocrysin cases, and the sedimentation reaction was favorably influenced more frequently. The best results were obtained in cases that had existed less than a year. In cachectic cases treatment was without benefit.

The evidence at the present time would indicate that sanocrysin, chrysarobin and similar preparations are at least worthy of more study before being entirely discarded as agents for good in tuberculosis.

TUBERCULOSIS AMONG STUDENTS AND NURSES

J. Steidl, *Amer. Rev. Tuberc.*, 26:98 (July) 1932, made a study of tuberculosis among medical students at Harvard and comes to the conclusion that much remains to be done in the way of early diagnosis of tuberculosis in medical students and doctors. He makes a plea that all medical schools should make every effort to diagnose this disease in their students at a time when it is most amenable to treatment. He advises the routine x-ray examination of the chest of all students including the apparently healthy.

J. A. Myers and M. Wulff, *Amer. Rev. Tuberc.*, 26:530 (Nov.) 1932, discuss the question of the control of tuberculosis among university students. They feel that a procedure which will ultimately be satisfactory is to apply the tuberculin test to all entering students and to examine by x-ray the chests of those who react positively and to repeat the tests of the negative reactors every six months and to make x-ray films of the chest of those who have become positive. By this method in four years one should have a working knowledge of the tuberculosis situation in any student body.

W. B. Soper and J. L. Wilson, *Amer. Rev. Tuberc.*, 26:548 (Nov.) 1932, give their experiences of the examinations of 3000 students entering Yale University. They found that pulmonary tuberculosis of manifest degree in young adults is often demonstrable by routine x-ray, while history taking and ordinary physical examination often fail to disclose manifest tuberculous process. They advise routine roentgenograms of the lungs of college and university students. They warn however that the use of these special methods requires an intelligent interpretation of the findings and a wise application of them to the individual student.

E. A. Leggett, and J. A. Myers, *Amer. Rev. Tub.*, 26:559 (Nov.) 1932, give their findings in the routine examination of high school students. They found that x-ray examination of the chest of children who react positively to the intracutaneous injection of tuberculin show evidence of pulmonary tuberculosis in from 26 to 69 per cent. In groups with a history of known contact with adult pulmonary tuberculosis a higher percentage show evidence of pulmonary tuberculosis. They conclude that tuberculosis surveys in schools are an important aid in the early diagnosis of tuberculosis.

S. J. Shipman and E. A. Davis, *Amer. Rev. Tuberc.*, 27:474 (May) 1933, made an extensive study of tuberculosis among nurses in the University of California Hospital. They found that between six and seven per cent of the student nurses developed clinical tuberculosis during training. An additional four per cent have developed the disease since graduation. It is interesting to note that the majority of nurses who failed to react to tuberculin on entrance also failed to react when rechecked. Most of the nurses who developed clinical tuberculosis during training were positive reactors on entrance. They urge that emphasis be placed upon repeated physical examinations and roentgenograms, checking of weight and an attempt to

arouse what one might term a "tuberculosis conscience" among the nurses.

PNEUMONOCONIOSIS

P. Heffernan, *Tubercle*, 13:193 (Feb.) 1932, divides silicosis into simple silicosis and infective, each having a different prognosis. He finds that acute tuberculosis superimposed on silicosis is usually rapidly fatal, while true tuberculosilicosis, although a much more serious and more disabling condition than simple silicosis is often a chronic fibrotic and comparatively benign form of pulmonary tuberculosis. In simple silicosis the hard pin-point shadows of the primary stage are characteristic. In infective silicosis the picture is more blurred and irregular from the beginning. Root shadows are also more marked in infective than in simple silicosis. He concludes that the exclusion of persons with latent or active tuberculosis or with lungs otherwise infected from the exposed industries and the protection of the persons employed in these industries from infection are essential measures in reducing and finally abolishing pneumonoconiosis and the disability produced thereby.

L. G. Irvine, *Brit. M. J.*, 1:693 (April 16) 1932, recognizes three distinct types of silicosis, (1) simple or uncomplicated silicosis, (2) silicosis of the infective type but without evidence of active tuberculosis, and (3) tuberculosis with silicosis in which a silicotic condition is conjoined with active tuberculosis. He emphasizes again that the grave feature of silicosis is the high potential predisposition to the ultimate development of tuberculosis.

E. H. Kettle, *Brit. M. J.*, 2:281 (Aug. 13) 1932, taking up the relationship of dusts to tuberculosis concludes that silica and asbestos are the only known dusts which have any etiological relationship. Inhaled dusts are dangerous only when they become soluble in the body and act as tissue poisons. He adds that silica is soluble in the tissue fluids, and that its action is chemical and not physical. It is not merely a question of fibrosis as he points out, but the fact that silica combines with protoplasm and converts it into a particularly favorable soil for the growth of the tubercle bacillus.

W. Gerlach, *Deutsche Med. Wchnschr.*, 58:283 (Feb. 19) 1932, emphasizes that cavitation in the silicotic lung may develop without tuberculosis. Postmortem examination of six cases of severe silicosis with cavity formation revealed no evidence of tuberculosis in four. The wall of such a cavity is unlike that of a tuberculous cavity. There is no inflammation and no granulation tissue. The cavity results from liquefaction of the fibrotic tissue such as is seen in myomata. Even the formation of silicotic nodules and fibrotic tissue may occur without the presence of the tubercle bacillus.

H. Coleman, *Arch. Path.*, 20:909 (Dec.) 1931, reports two cases of asbestosis which came to autopsy. He points out that symptoms of pneumoconiosis may come on years after a short exposure. The marked fibrosis of the pleura, particularly at the diaphragm is characteristic of asbestos. The most striking feature in the lungs however, are the so-called asbestosis bodies. They are present in great numbers in the fibrosed areas of the lungs, in the spleen and in the reticuloendothelial cells.

Gerbis and Ueko, *Deutsche Med. Wchnschr.*, 58:285 (Feb. 19) 1932, give their observations on 33 employees who were exposed to asbestos dust. They presented the following symptoms, cough, expectoration, paroxysms of dyspnea, loss of appetite and weight, pleuritic pains and languor. The demonstration of asbestos bodies in the sputum is of special diagnostic importance. These bodies give a deep blue reaction with potassium ferrocyanide and diluted hydrochloric acid. They emphasize the fact that there is a marked discrepancy between clinical signs and subjective symptoms and the x-ray picture. Even the most severe cases do not give such impressive x-ray pictures as those seen in silicosis. They add that asbestosis of the lungs may occur without preceding pulmonary tuberculosis.

SPONTANEOUS PNEUMOTHORAX

M. Siebner, *Deutsche Med. Wchnschr.*, 58:252 (Feb. 12) 1932, reports a case of spontaneous pneumothorax which was diagnosed as perforated gastric ulcer. Laparotomy was done, and its true nature was recognized. Patient made an uneventful recovery. Five weeks later the lung was completely reëxpanded. No tuberculosis was found.

Bilateral spontaneous pneumothorax in a case of one of us (J. B. H.), first occurring on the right was diagnosed as gall bladder disease and next on the left as angina pectoris. The fact that no clinical tuberculosis is discovered does not warrant the conclusion that tuberculosis is not the fundamental cause of nearly all spontaneous pneumothoraces.

W. R. Oechsli, J. Skillen, *Amer. Rev. Tuberc.*, 27:67 (Jan.) 1933, report a case of spontaneous pneumothorax with acute abdominal symptoms. The outstanding feature of this case is the absence of the one symptom that is usually present in spontaneous pneumothorax, namely, dyspnea, and the presence of symptoms not usually encountered in these cases, that is, abdominal pain, nausea and vomiting. They suggest that this variation from the usual symptom-complex is probably explained by the fact that the direction of greatest displacement of viscera was downward, with consequent embarrassment of the diaphragm so that the heart and mediastinum were only moderately displaced.

L. S. T. Burrell, *Tubercle*, 13:433 (July) 1932, believes that rupture of an emphysematous bleb is probably the cause of spontaneous

pneumothorax occurring in apparently healthy persons. In these cases no effusion forms, and complete recovery almost invariably occurs. He finds that it is not common in general emphysema associated with chronic bronchitis, but occurs from the rupture of a small bleb with a valvular opening to a bronchiole. Rest in bed and the relief of pressure symptoms are the only measures indicated in treatment. He is of the opinion, however, that pulmonary tuberculosis is the most common cause of spontaneous pneumothorax. It may be an early sign but usually occurs in advanced lesions. Drainage is justified only as a last resort to relieve symptoms when the pneumothorax cavity cannot be closed by reëxpansion of the lung or failing this by thoracoplasty.

H. Huber, *Wien. Klin. Wchnschr.*, 45:991 (Aug. 5) 1932, calls attention to the fact that the term spontaneous pneumothorax is a misnomer because disease in the lung, trauma or a sudden increase of intrapleural pressure is necessary to produce the tear in the lung. The etiology of a number of cases remains unknown and is not satisfactorily explained by any of the theories that have been advanced. The male sex, the age period between 30-40 and the right side show a slightly higher incidence. The symptoms are not always characteristic and point sometimes more to abdominal than to pulmonary disease. He finds that the intrapleural pressures bear no relationship to the degree of functional disturbance or to the gravity of symptoms. He feels that there may be a variety of etiological factors, as for instance a circumscribed emphysematous bleb, pulmonary scars or blood-clots in a bronchus, which interfere with expiration, or even congenital malformations.

De Léobardy and Pasquet, *Rev. d. l. Tuberc.*, 13:375 (April) 1932, report a case of recurrent spontaneous bilateral pneumothorax associated with pneumonoconiosis. The patient made a good recovery on two different occasions. They believe that this is the first case of its kind to be reported in the literature.

One of us (J. B. H.) in February, 1933, had a case of marked silicosis in a sand-blaster with a bilateral spontaneous pneumothorax with almost no symptoms except moderate dyspnea.

B. T. McMahon, *Am. J. M. Sc.*, 183:695 (May) 1932, reports a case of benign bilateral pneumothorax with recovery, the rupture of the second lung taking place before the complete reëxpansion of the first. He points out that it is mostly a sequel of progressive pulmonary tuberculosis. He found, however, only 58 per cent of the cases to be of this type.

H. Selby, *Lancet*, 1:238 (Jan. 30) 1932, also reports a case of recurring spontaneous pneumothorax on the same side. This case was definitely due to pulmonary tuberculosis.

MISCELLANEOUS

J. B. Hawes, 2nd, *N. E. Jour. of Med.*, 207:874 (Nov. 12) 1932, discussing the heart in tuberculosis concludes that to be successful in tuberculosis work one should treat the patient first, his tuberculosis second, and that his heart rarely if ever requires direct treatment.

H. P. Caryophyllis, *Wien. Klin. Wchnschr.*, 44:1467 (Nov. 20) 1931, discussing the effects of pneumothorax, observed that the toxic symptoms of patients with pulmonary tuberculosis often decrease immediately after the first or second insufflation of air before a suitable collapse is established. He found that in many cases the discrepancy between this symptomatic relief and the incompleteness of the pulmonary collapse is striking. The usual explanations of the therapeutic action of induced pneumothorax are unsatisfactory to an understanding of such occurrence. He explains that in normal respiration the lung is in a continuous state of hyperemia due to the negative pressure, this being particularly marked in the inspiratory phase. By diminishing the negative intrapleural pressure, even without establishing a collapse this hyperemia is reduced, and therefore, the resorption of toxic products is markedly decreased. He feels that this mechanism is probably the cause of the immediate symptomatic improvement following induced pneumothorax.

J. Alexander, *Amer. Rev. Tuberc.*, 26:209 (Sept.) 1932, points out that the status of the sanatorium has changed. He feels that the use of surgery in the treatment of pulmonary tuberculosis has increased more rapidly than the supply of properly trained thoracic surgeons. He finds that there is a tendency for some of this surgery to be done by general surgeons, or even by internists whose special training in the proper choice of patients and in the technique of operations may be inadequate. He urges that every group of rural sanatoria should have affiliated with them a geographically central tuberculosis hospital, located either in a non-urban medical centre or in or close to a city, which should serve as a clearing house for them and which should have upon its visiting staff an adequately trained thoracic surgeon and other specialists. This central hospital would retain for treatment those patients requiring the services of its specialists and would transfer to its affiliated rural sanatoria all other patients, including artificial pneumothorax cases and those who had received surgical treatment.

H. Koenigsfeld, *Schweiz. Med. Wchnschr.*, 62:494 (May 21) 1932, discussing trauma and pulmonary tuberculosis finds that direct reactivation of an endogenous focus as a result of trauma can only be assumed on the grounds of structural alteration of the focus leading to a direct extension of the process locally, or rupture into the blood or lymph stream with subsequent dissemination of tubercle bacilli; proc-

esses which are accompanied almost immediately by manifestations of acute clinical disease. He feels that an existing direct etiological correlation between trauma and developing pulmonary tuberculosis is justifiable only under these conditions.

We do not believe that his point of view is tenable in the slightest.

M. Davidson, *Brit. J. Tuberc.*, 26: 80 (April) 1932, points out that in marital tuberculosis, if one of the partners has advanced disease the risk of massive doses of tubercle bacilli, and consequent exogenous re-infection in the consort are increased. He emphasizes however that if precautions are observed there does not appear to be more risk to the married partner than to any one else in frequent contact with tuberculous patients.

E. W. Phillips, *Amer. Rev. Tuberc.*, 27: 277, 1933, describes the effects on patients on being moved from low to high altitudes and vice versa. The patients were moved to a sanatorium in the mountains at an altitude of 5300 ft. in the summer time, then returned to Phoenix in October. He found that more than one third of men and women alike, when moved from a low to a high altitude, showed a moderate acceleration of the pulse rate. This was not accompanied by any increase in the clinical activity of their disease; it had no unfavorable prognostic import; it subsided on their return to the lower altitude. The body temperatures of these patients, whether febrile or normal, were not affected by change of climate and altitude. The incidence of pulmonary hemorrhage was almost exactly the same in the higher altitude, as in the lower. Tendency to hemoptysis was not found to contraindicate transfer to the mountains though all patients so transferred were kept unusually quiet during the period of adjustment. On the whole, he feels that the biennial climatic change is quite beneficial to the patients.

E. A. Underwood, *Brit. J. Tuberc.*, 26: 178 (Oct.) 1932, reviews the literature on the use of light in the treatment of pulmonary tuberculosis, and the diversity of opinion as to its merits is brought out. While certain competent observers are convinced that they have had good results in selected cases, the dangers of the method, such as reactivation of quiescent disease, the production of hemoptysis, the dissemination of infection, and the production of focal reactions, must always be borne in mind. He points out that the difficulties of treatment by light are chiefly two, (1) the estimation of correct dosage and (2) the selection of the suitable case. He emphasizes that the method should be used in pulmonary cases only as an adjunct to the established methods of treatment, and hence it should find no place outside the residential institution.

NATIONAL SOCIETY FOR THE PREVENTION OF BLINDNESS*

The National Society is a lay organization and is maintained entirely by voluntary subscriptions. Its constituency is nation-wide, and donations of any amount are welcome. The Society derives no support from foundations, and it does not solicit funds from members of the medical profession, as it is felt that physicians make their contributions in the form of medical research as well as free service to patients who are not in a position to pay.

The objects of the Society as stated in its By-Laws are:

1. To endeavor to ascertain, through study and investigation, any causes, whether direct or indirect, which may result in blindness or impaired vision.

2. To advocate measures which shall lead to the elimination of such causes.

3. To disseminate knowledge concerning all matters pertaining to the care and use of the eyes.

Although it relies on the ophthalmologic profession for its scientific information and definitely recommends that all matters dealing with the eyes should be cared for by ophthalmologists, it is not the policy of the National Society for the Prevention of Blindness to take a positive stand against optometry. Its literature and information service are, of course, available to optometrists and optical manufacturers just as to other interested persons. The Society is inclined to deplore the exaggerated emphasis sometimes placed on making the public eyeglass conscious. At times, also, it has been disturbed by the confusion which occurs in the public mind because of the existence of agencies established to further the commercial interests of optical concerns; when such agencies are masked under an altruistic name, they appear to be working in the public health field on the same basis as the Society. However, it has been found that such organizations, lacking sound policies and principles, are likely to be short-lived.

The National Society itself is an outgrowth of a special state-wide committee on prevention of blindness of the New York Association for the Blind, established in 1908 and financed for some years by the Russell Sage Foundation. This committee subsequently became independent, and in 1915, through an additional grant from the Rockefeller Foundation, it merged with the American Association for the Conservation of Vision, forming the National Committee for the Prevention of Blindness. The name was changed to the National Society for the Prevention of Blindness in 1928.

*Excerpts from the Article in the *Archives of Ophthalmology*, November, 1933, Vol. 10, pp. 621-630, relating to the National Society for the Prevention of Blindness.

CASE RECORDS
of the
MASSACHUSETTS GENERAL HOSPITAL

ANTE MORTEM AND POST MORTEM RECORDS AS USED IN WEEKLY CLINICAL-PATHOLOGIC EXERCISES

EDITED BY RICHARD C. CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 20051

PRESENTATION OF CASE

First admission. A forty-two year old Negro porter entered for the first time fifteen years before his final admission.

He had been seen in the Outpatient Urological Clinic and also in the Outpatient Skin Clinic six weeks before admission to the hospital. In the Skin Clinic a post-balanitic condition consisting of dryness and thick scales was found. In the Urological Clinic he gave a history of having been troubled off and on for two years with frequency three times a day and once at night. A smear showed Gram-negative intracellular diplococci. Two obstructions were encountered with a Number 16 bougie. He was given several irrigations. A filiform could not be passed.

During his stay in the wards a perineal section was performed. Sounds up to Number 29 were passed with some difficulty. A Wassermann test was positive. He gave a history of having had a penile lesion about four years before for which he apparently received very little treatment, only liquid medicine. He was discharged at the end of three weeks.

History of interval. The patient was apparently in good health until three years before admission, when he was circumcised because of shrinking foreskin. Following this there developed a pale reddish firm ulcerated mass on the glans penis. There was some oozing of clear fluid but no pain. About one year before admission he had many teeth extracted. This interfered with his diet, making it very difficult for him to eat solid foods. Three months before entry he developed a sensation of having a lump in his throat. This produced increased difficulty in swallowing and often choking. At first this occurred only with solid foods, but later with fluids. He occasionally had pain in his throat, but no cough or sputum. There was no interference with breathing. During the year before his second entry he lost about forty-five pounds in weight and became somewhat weaker.

Second admission, fifteen years after his previous discharge. He was brought into the Emergency Ward after having fainted and fallen in the street.

Physical examination showed a poorly nourished, emaciated, feeble looking Negro. The skin was loose and dry, with generalized keratoses and scaling. The mucous membranes were pale. The teeth were absent. On the left posterior margin of the soft palate was a small erythematous, slightly ulcerated area about half a centimeter in diameter. In the tonsillar fossa and pharynx was a soft brittle caseous substance, greenish-white in color. Several small shotty glands were present in both inguinal regions. There was a firm tender mass 4 by 3 centimeters in the left submaxillary region. The heart was not enlarged. The rhythm was irregular, with occasional extrasystoles. The radials and brachials were tortuous and palpable. The prostate was enlarged, firm and slightly tender. The glans penis was covered with dry grayish pearly crusts. The right side of the glans was ulcerated and indurated. There was a slight ulceration on the lower surface of the left side of the scrotum.

Examination of the urine showed a slight trace of albumin, a specific gravity of 1.010 and large numbers of white blood cells. Examination of the blood showed a red cell count of 3,190,000, a hemoglobin of 45 per cent, a white cell count of 17,950 with 83 per cent polymorphonuclears. The Hinton test was positive, the Wassermann negative. A urethral smear showed occasional white blood cells and epithelial cells and many Gram-positive cocci and bacilli. A phenolsulphonephthalein test showed a 30 per cent excretion in two hours and forty-one minutes.

DIFFERENTIAL DIAGNOSIS

DR. TRACY B. MALLORY: I have asked Dr. Barney to discuss the differential diagnosis on this case.

DR. J. DELLINGER BARNEY: I did not see the case. That is why you asked me to discuss it, I suppose.

I think in view of the history of a lesion on the penis some time before and in the presence of a positive Hinton, in spite of the fact that the Wassermann was negative, one would strongly consider the idea of a luetic lesion. Also one might have to consider the idea of a chronic balanitis with proliferation of the mucosa.

Of course carcinoma comes strongly into the foreground as the probable diagnosis, and in addition to carcinoma one would have to consider other conditions. The only one I am familiar with is sarcoma, and I am not particularly familiar with that, but I believe it does occur.

There seems to be no doubt that the man had a generalized infection, that he had tertiary syphilis, and that his condition was not at all good at the time of the second admission.

The fact that he had strictures of the urethra would indicate that he had had trauma to his urethra or infection of the urethra by the gonococcus. Also we know from experience with gonorrhea that the infection must have been of considerable standing because he had

strictures when he was first seen, and we know that strictures do not form for a long time after infection, from three to five years. There is no history of trauma, so I think we can rule it out. There is likely to be a history from the patient of trauma, because it is a very painful thing, with hematuria and a good deal of trouble connected with it that the patient would not be likely to forget.

DR. MALLORY: The pre-operative diagnosis in the ward was carcinoma of the penis, as Dr. Barney has suggested. They probably wanted to be absolutely on the safe side and a biopsy was done. It was reported as a very low grade epidermoid carcinoma of low malignancy.

FURTHER HISTORY

The patient was transferred from the Skin Service to the Urological Service, where his penis was amputated and an internal and external urethrotomy was performed. During the operation the blood pressure was 50/30. The day following operation the temperature was 100°, the pulse 96 and the blood pressure 85/50. That evening he suddenly coughed very forcefully and as he turned over in bed to eat his supper he spat out a large mouthful of blood. This was followed within ten seconds by a projectile emission from the mouth of a kidney-basin full of bright red blood. His breathing became more rapid, and immediately following an inspiratory struggle there was a second emission of a kidney-basin full of blood preceded by a large loose fresh clot. His respirations stopped. He was given artificial respiration and two cubic centimeters of adrenalin intracardially. This produced very little effect. He died twenty-four minutes after the appearance of the first projection of blood.

CLINICAL DISCUSSION

DR. MALLORY: Have you anything further to add, Dr. Barney?

DR. BARNEY: I do not think any of us could have foreseen what the cause of death was. I do not know what the condition was in his throat, but of course the carcinoma of the penis was not an emergency affair. They are very slowly growing, and various palliative things might have been done, but I do not think they would have averted the disaster that finally overtook him. Possibly the variation of blood pressure caused by the spinal anesthesia caused some stress on the vessel, which otherwise would have got along very well. It seems to me that I should have done just what was done after having established the diagnosis by biopsy.

Not only that, but he had a stricture of the urethra which was causing a good deal of back pressure on the kidneys and that should have been relieved. The only other way of relieving it would be by suprapubic cystotomy, and I think an amputation is no more complicated than a suprapubic cystotomy would be.

CLINICAL DIAGNOSES (FROM HOSPITAL RECORD)

Carcinoma of the penis.
Tertiary lues.

ANATOMIC DIAGNOSES

Amputation of the penis for epidermoid carcinoma.
Gumma of the pharynx.
Vincent's angina.
Erosion of pharyngeal (?) artery with hemorrhage.
Malnutrition.
Luetic aortitis.
Arteriosclerosis, aortic and coronary.

PATHOLOGIC DISCUSSION

DR. MALLORY: The impression made upon me by the general appearance of the body of this man was one of extraordinary malnutrition. He was a powerful man and at some time or other must have weighed 170 or 180 pounds. At the time of autopsy we estimated his weight as under ninety pounds. The skin was everywhere loose, dry, and scaly, almost the consistency of an alligator's skin. The question came up very strongly in my mind whether starvation might not have been one of the primary causes of his illness.

The actual terminal event that caused his death was the lesion in his pharynx which had been noted but had not received so much attention as the lesion in the penis. An attempt had been made to biopsy the lesion, but the patient's death supervened before the report could be obtained, so that that did not enter into the picture of the ante-mortem differential diagnosis. This lesion in the pharynx turned out to be a gumma, a rather large one, with marked superficial necrosis and a superimposed Vincent's angina, the ulceration finally proceeding to the point where a very large branch of the internal carotid artery was eroded into and an immediate fatal hemorrhage occurred.

In retrospect it is fairly obvious that the pharyngeal lesion was of much greater immediate significance than the penile lesion, although I doubt if any form of therapy would have been effective in preventing the termination.

DR. CHARLES L. SCUDDER: May I ask a question? In retrospect might it not have been better judgment to treat the carcinoma of the penis by x-ray? It was squamous cell; the strictures of the urethra were not bothering him and had nothing to do with the terminal condition of course. Would not that have been good judgment? Thus avoiding any anesthesia at all?

DR. MALLORY: It was not a type of carcinoma

that is sensitive to radiation. The highly differentiated types are insensitive.

DR. SCUDDER: I did not know that. Thank you.

DR. MALLORY: I think it is a general attitude of all medical men to consider carcinoma as an emergency. As a general policy every patient on whom a diagnosis of carcinoma can be made or even a serious suspicion of cancer can be raised is advised to have immediate operation, usually in a matter of days, unless there is a very obvious surgical contraindication such as extreme dehydration, anemia, et cetera. I wonder if one does not occasionally go far astray. This man had had his cancer for three years. The examination of the inguinal glands was negative even at the time of autopsy, and I do not think there was any probability that it would have metastasized for many months more. Do you not think that is possible, Dr. Barney?

DR. BARNEY: Yes; it is a very slowly growing cancer.

DR. MALLORY: I think we lean over backward in urging patients with carcinoma to have immediate operation which is often not absolutely necessary.

DR. BARNEY: Can some one here tell us what might have been done in the way of treatment of the pharyngeal lesion which might have averted the disaster that overtook him?

DR. E. W. KARCHER: I remember seeing this man in the ward for Dr. Cummings. I made a diagnosis then of unquestioned carcinoma of the penis. I hesitated in making two diagnoses of carcinoma, though it seemed to me that the large lesion on his left pharyngeal wall and fauces with a gray necrotic pellicle over it looked more malignant than gummatous. I remember inquiring afterwards regarding the report on the biopsy from this lesion, and was informed that it was a chronic inflammatory condition. Was that ever proved to be gumma?

DR. MALLORY: It is extremely suggestive histologically.

DR. KARCHER: Of course the man was much emaciated and there was not a great deal we could do in the way of treatment at the time. He had some degree of positivity in his blood. We gave iodides and mercury by mouth, which seemed justifiable at the time. I do not think that under the circumstances one would be justified in going ahead with a more vigorous treatment in the case of a man in that condition.

DR. MALLORY: What period of time do you think it might take to clear up a gumma of that size?

DR. KARCHER: It was three inches or more in diameter. I should say about three months.

I did not know anything about the final outcome of this case. It seems very unusual for a gumma to cause death by hemorrhage.

DR. MALLORY: I personally do not think we can explain it entirely on the basis of gumma. There was unquestionably a severe Vincent's infection superimposed, but I think there was an underlying luetic process. The presence of syphilis was proved beyond a doubt by the condition of his aorta.

DR. KARCHER: As in so many of these cases, it was difficult to get a good look at his throat with the light we had. His resistance was extremely low and he did not make much if any response to mixed treatment. The hemorrhage it seems to me is more against a luetic process than in favor of it. I was in hopes there might be malignancy there. There was no question as to amputation. The case was such that it seemed highly justified from the standpoint of hygiene alone, particularly after the biopsy.

DR. MALLORY: I will show you the sections on this case.

This first section is the biopsy specimen from his penis. The masses of red staining material are the groups of cornified cells. Probably four fifths or nine tenths of the cells are completely cornified and acidophilic. In other words it is a very high grade of differentiation, a tumor of correspondingly low malignancy.

The second section shows in the center of the field the remnants of a very large blood vessel that has been completely occluded by an organized and slightly recanalized thrombus. In other words there is a very marked endarteritis surrounding this large area of necrosis and fibrosis in which a few giant cells can be found.

The process is evidently a very chronic one and is entirely consistent with syphilis. In addition, on the surface of the lesion was a necrotic area in which fairly numerous Vincent's spirochetes could be found, so that I think he probably has a real gumma of the pharynx, and on that area of somewhat diminished resistance a Vincent's infection was superimposed, and it was the ulceration of the Vincent's that finally went through into the blood vessel and caused the hemorrhage.

DR. BARNEY: That would occur regardless of operation, would it not?

DR. MALLORY: In all probability, yes.

CASE 20052

PRESENTATION OF CASE

DR. RICHARD CHUTE: This is the case of a wizened old man of ninety-two who came into my office one afternoon last autumn with a history that for several years he had had what would be called prostatic symptoms,—i.e., frequency, urgency, nocturia,—and that recently he had had a certain amount of hematuria from time to time. These symptoms had been much worse in the past few weeks, ending in complete retention about twenty-four hours before the visit. His doctor had catheterized him. According to both the doctor and the patient there had been considerable difficulty. This man was more or less arteriosclerotic, could not stand any pain, and was very restless. The doctor

had considerable trouble in inserting a catheter, so he sent him to me.

Examination showed a man of ninety-two who did not look so old. I should say that he looked about eighty. He was pretty wizened but reasonably active. He was very deaf. Examination of the prostate showed that it was moderately enlarged and had a number of hard nodules on it that would be said from the clinical point of view to be undoubtedly carcinoma. The heart sounds were of fair quality. The blood pressure was 120/75. There were some murmurs in the aortic area, but in general the heart was in fair shape. The bladder could be seen and palpated well above the suprapubic region. One interesting fact was the presence of definite moisture around the umbilicus which suggested that he had a patent urachus, and the pressure in the bladder had made a little urine come out there. The pupils reacted to light.

I passed a catheter. That did not seem much trouble to me, but it did to the patient. There was a little grating as it went in, suggesting a stone or carcinoma. I got out eleven ounces of urine, and sent him home, advising that his doctor teach him to catheterize himself or that he have a permanent cystotomy.

They tried that for a few days and had quite a time. The catheter and the old gentleman did not agree at all. They called me up again and he came in here a few days afterward. At that time his general condition was worse really. This catheterization had given him a good deal of trauma.

I think Dr. Kelley tied in the catheter and we tried him on catheter drainage for twenty-four hours, but he pulled it out and jumped around and we could not do anything with him.

The next day we did a cystotomy under local anesthesia. He went back to his room in good condition. That afternoon he got pretty wild. He wanted to pull out the suprapubic tube and from 1.30 to 3.30 he had one-third of a grain of pantopon, one-sixth of morphia and a dram of paraldehyde, which was probably rather too much sedative for a man ninety-two years old.

When I came down in the later afternoon he had been allowed to slip down flat in bed, and I found him comatose and with many tracheal râles, and I thought he was gone. After he had been put up in a high sitting position he brightened up and was very well for another twenty-four hours, but the afternoon of the second day he showed signs of pneumonia and his temperature shot up. He was put in an oxygen tent, but without avail, and he died about twenty-two hours after I operated on him, from what seemed to be clinically a fairly obvious bronchopneumonia.

Clinical Diagnoses

Carcinoma of the prostate?
Bronchopneumonia.

Anatomic Diagnoses

Carcinoma of the prostate with extension to both ureters.
Ureteral calculus, right.
Operative wounds: suprapubic cystotomy, bilateral vasectomy.
Bronchopneumonia.
Pulmonary edema.
Diverticulosis of the sigmoid.
Melanosis of the colon.
Arteriosclerosis.

Pathologic Discussion

Dr. Tracy B. Mallory: This case is essentially one of the terminal stages of prostatic cancer. One feature which I have not seen very often was that the carcinoma had invaded both ureters. The right ureter was almost completely blocked by it and also by a stone which was wedged in its lower portion just above the bladder. The other ureter showed numerous little pearly granules on the mucosa which in gross we thought were probably carcinoma. Microscopically we found that we were mistaken and that they consisted of little granules of so-called ureteritis cystica, but in the outer layers of this ureter also there was definite carcinomatous invasion.

Like nearly all of these very old people, he was quite a museum of pathology. One very common thing in elderly people is so-called melanosis of the colon, and in this man the entire large intestine, beginning sharply at the ileocecal valve and extending down to the rectum, was practically black. I have seen that a number of times in patients over ninety. Sometimes one finds it in younger people.

He had a marked diverticulosis of the sigmoid, also a very common thing in very old males.

Arteriosclerosis with marked aortic dilatation almost suggesting aneurysm was of course to be expected.

There was a diffuse terminal bronchopneumonia.

So far as could be made out that ureteral stone, which must have been present for years, had never caused a symptom, and the kidney on that side was not particularly atrophic. It is rather surprising that a stone over a centimeter in size could be present so long and give so very little trouble. Have you seen stones of that character, Dr. Barney?

Dr. J. Dellinger Barney: Occasionally, yes. I think they are rather uncommon.

Dr. Chute: May I say one more thing?

I should like to say that one lesson to be learned from this case in regard to surgery on extremely old people is that one has to be careful about the question of pneumonia. I helped my father do a prostatectomy successfully on a man who had his ninety-fifth birthday in the hospital several years ago, and we got him up the day afterwards and did not give him very much sedative. I think that it is very important not to let these patients lie flat.

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OBSTETRICAL ANALGESIA: A WARNING

THE recent developments in the field of obstetrical analgesia and anaesthesia have brought relief from suffering. Have they brought anything else?

The patient says "I took some green medicine" or "some pink medicine" or "some purple medicine" or whatever color the capsule may have been and "pretty soon I went to sleep and I didn't know anything until I was back in my bed and they showed me my baby". So much for the patient's memory, but other persons might not give the same account of the incident. It is well known to physicians who have experience with the newer drugs that occasionally the patients become violently excited and in some series of cases about twenty per cent have required restraint. Therefore, the drugs should be used only when the patient can be properly supervised and controlled; that is, in general, only in the hospital.

Because the drugs are so useful in relieving the mother, relatively so free from danger to the child, and so easy to administer, there is a growing tendency to use them in the home practice of obstetrics. This use of the barbiturates cannot be too strongly deprecated and the admonitions in the literature should be emphasized. Physicians should be repeatedly warned that without constant supervision of the patient, the use of barbiturates may result in a catastrophe.

THE DISGRACE OF DIPHTHERIA

IN the country as a whole diphtheria has become a minor cause of death, its deathrate of 4.5 per 100,000 in 1932 being only a fraction of the figures recorded at the beginning of the century. There are, however, as *The Bulletin* of the Metropolitan Life Insurance Company points out, a number of states and large cities where the diphtheria deathrate is today not only disgracefully high, but actually increasing.

Four states in 1932 registered deathrates from diphtheria in excess of 13 per 100,000. In New Mexico, which with 19.5 per 100,000 had the highest rate in the country, the 1932 figure was actually 34 per cent higher than prevailed for the registration area of the United States *ten years previously.* In Kentucky, West Virginia and Oklahoma the rate for 1932 was close to the average for the country ten years ago, although the average has been reduced nearly seventy per cent since that time.

New England, the Middle Atlantic States and the Pacific Coast States constitute the only sections in which no states are found whose diphtheria deathrate are still high and increasing. The worst regional picture is that of the four East South Central States: Kentucky, Tennessee, Alabama and Mississippi, and the diphtheria situation in Oklahoma, Arkansas and Louisiana, in the West South Central region, is characterized as deplorable. Conditions in other groups of states are bad, and in other individual states very bad.

Thirty-two large cities had in 1932 diphtheria mortality rates above the average of 4.5 per 100,000, Knoxville leading the list with 17.0, Dallas being a close second with 16.6. Lowell, with 11 deaths per 100,000 was the only New England city with a rate in excess of 10, but Providence and Worcester are included in the thirty-two with rates of 6.0. Lowell's rate of 11.0 may be contrasted with her 1930 rate of 4.0. Providence had in 1930 a rate of 7.9, and Worcester a rate of 4.6.

"It is difficult to understand," the Report concludes, "how whole states and certain cities can justify their administration of the public health facilities to permit the continuance of high and increasing diphtheria rates at the very time when a marked reduction is going on in the country at large, and all over the civilized

world. Diphtheria would soon be banished altogether if immunization by toxin-antitoxin or toxoid were extended to include all susceptible children".

THE SERUM TREATMENT OF PNEUMONIA

For several years attention has been concentrated on the possibilities of specific treatment of lobar pneumonia. Some of the difficulties encountered lie in the knowledge that there are several major groups of this disease with a large number of sub-varieties of some of them.

The Massachusetts State Department of Public Health has been especially active in the study of the methods which may be employed to make the latest forms of treatment available for physicians throughout the State, under the supervision of Dr. Roderick Heffron whose office is in Room 546, State House, Boston.

"A Study of Type I Pneumococcic Infections" by W. D. Sutliff, M.D., and Maxwell Finland, M.D., which is an important contribution to the problem involved appears on page 237 of this issue. This study confirms the belief of investigators that the appropriate serum treatment of Type I pneumonia is of great value in limiting the length of illness and the mortality of this type, and should be read by practitioners who may be called to treat lobar pneumonia which is usually more prevalent in winter and spring.

Although the State Department of Public Health has arranged for the distribution of serum for the treatment of pneumonia, through seventeen stations, and also for consultation service, it may be that one hundred per cent of the doctors have not prepared themselves for dealing with the disease, for in a sense this is an emergency which calls for prompt action. The serum provided by the State is polyvalent and applicable for both Type II and Type I, and if the diagnosis is made early and followed by the specific therapy, the results will be more satisfactory in a larger proportion of cases than under any other treatment. Many times the effect of the serum treatment is spectacular, almost equal to that when antitoxin is used in a diphtheria case.

Typing can be done so promptly in any one of the seventeen stations in the State that there need be very little delay, if the doctor will send the sputum for examination.

It is now up to the doctor to adjust himself to the State program. He must know his nearest pneumonia center and act promptly if he suspects the presence of the disease. If he does not already know, he may write to Dr. Heffron for information. We hope that the article by Sutliff and Finland will stimulate interest in the pneumonia problem.

THIS WEEK'S ISSUE

Contains articles by the following named authors:

Sutliff, W. D. B.A., M.S., M.D. Cornell University Medical College 1924. Instructor in Medicine, University of Chicago. Formerly Assistant Physician, Thorndike Memorial Laboratory, Boston City Hospital, and Instructor in Medicine, Harvard Medical School. Address: University of Chicago, Chicago, Illinois. Associated with him is

Finland, Maxwell. B.S., M.D. Harvard University Medical School 1926. Assistant Physician, Thorndike Memorial Laboratory, Boston City Hospital. Visiting Physician, Pondville Hospital. Francis Weld Peabody Fellow in Medicine, Harvard Medical School. Address: 818 Harrison Avenue, Boston. Their subject is "Type I Pneumococcic Infections with Especial Reference to Specific Serum Treatment." Page 237.

Phaneuf, Louis E. Phm.D., Ph.C., Sc.D. (Hon.), M.D. Tufts College Medical School 1913. F.A.C.S. Professor of Gynecology, Tufts College Medical School. Gynecologist and Obstetrician-in-Chief, Carney Hospital and Malden Hospital. Surgeon, Department of Gynecology, New England Medical Center. Consulting Gynecologist—Beth Israel Hospital, Boston; Leonard Morse Hospital, Natick; Henrietta D. Goodall Hospital, Sanford, Maine; Attleboro Hospital, Attleboro, Mass. Consulting Gynecologist and Obstetrician, Fall River General Hospital; St. Anne's Hospital, Fall River, Mass. His subject is "The Cervical Cesarean Section. An Analysis Based on the Study of Five Hundred and Fifteen Personal Operations." Page 245. Address: 270 Commonwealth Avenue, Boston.

Urmy, Thomas V. B.S., M.D. Harvard University Medical School 1926. Assistant in Medicine, Massachusetts General Hospital, Boston. Address: 226 Marlborough Street, Boston. Associated with him is

Ragle, B. Harrison. A.B., M.D. Harvard University Medical School 1916. Associate Physician, Massachusetts General Hospital, Boston. Address: 226 Marlborough Street, Boston. And

Allen, Arthur W. A.B., M.D. Johns Hopkins University School of Medicine 1913. F.A.C.S. Associate Surgeon, Massachusetts General Hospital. Instructor in Surgery, Harvard Medical School. Address: 264 Beacon Street, Boston. And

Jones, Chester M. A.B., M.D. Harvard University Medical School 1919. Physician, Massachusetts General Hospital, Boston. Assistant Professor in Medicine, Harvard Medical School.

Address: Massachusetts General Hospital, Boston. Their subject is "Beriberi Secondary to Short-Circuited Small Intestine." Page 251.

BURGESS, ALEX. M. A.B., M.D. Harvard University Medical School 1910. Visiting Physician, Rhode Island Hospital. Physician-in-Chief, Medical Service, Charles V. Chapin Hospital, and Miriam Hospital. Chairman, Division of University Health and Assistant Professor of Biology, Brown University. Fellow and Governor for Rhode Island, American College of Physicians. Visiting Pathologist, Charles V. Chapin Hospital. Address: 454 Angell Street, Providence, R. I. Associated with him are

BRIGGS, ASA S. A.B., M.D. Harvard University Medical School 1911. Assistant Superintendent, Rhode Island Hospital. Address: Rhode Island Hospital, Eddy Street, Providence, R. I. And

BURGESS, ALEX. M. JR. A.B. Brown 1933. At present a medical student in the first year class at Harvard University Medical School. Address: Vanderbilt Hall, Longwood Avenue, Boston. Their subject is "Oxygen Therapy by the Open Box Method." Page 254.

BALDWIN, J. F. A.M., M.D. Jefferson Medical College 1874. Formerly Professor of Physiology and of Anatomy, Columbus Medical College; Chancellor and Professor of Surgical Gynecology, Ohio Medical University; Professor of Clinical Surgery, Ohio State University. Founder of and Surgeon and Chief of Staff, Grant Hospital. Consulting Surgeon to Children's Hospital; Consulting Obstetrician to White Cross Hospital, Columbus, Ohio. His subject is "Four Synchronous Cancers of the Small Intestine." Page 259. Address: 115 South Grant Avenue, Columbus, Ohio.

HAWES, JOHN B. 2ND. A.B., M.D. Harvard University Medical School 1903. President, Boston Tuberculosis Association. Director, Rutland Cottage Sanatoria. Director, Massachusetts Tuberculosis League and National Tuberculosis Association. Address: 11 Marlborough Street, Boston. Associated with him is

STONE, MOSES J. M.D. Tufts College Medical School 1921. Assistant Professor in Diseases of the Chest, Boston University Medical School. Examiner in the Tuberculosis Clinics of the Boston Health Department. Physician at the Chest Clinic of the Massachusetts Memorial Hospitals. Assistant in Medicine, Beth Israel Hospital. Address: 11 Marlborough Street, Boston. Their subject is "Progress in Tuberculosis 1932-1933." Page 260.

The Massachusetts Medical Society

STATED MEETING OF THE COUNCIL

A STATED meeting of the Council will be held in John Ware Hall, Boston Medical Library, Wednesday, February 7, 1934, at 12 o'clock, noon.

Business:

1. Reading record of last meeting in abstract.
2. Report of Committee of Arrangements for Annual Meeting.
3. Report of the Treasurer and Auditing Committee.
4. Report of Committee on Membership and Finance.
5. Appointment of three delegates and three alternates to the House of Delegates, American Medical Association, from June 1, 1934.
   Appointment of delegates to Congress of American Medical Association in Chicago, February 12 and 13, 1934.
   Appointment of two delegates each to the annual meetings of the five New England State Medical Societies.
6. Consideration of draft of revised By-Laws, submitted by the Committee on Revision.
7. Incidental Business.

WALTER L. BURRAGE, M.D.,
Secretary.

Brookline, January 31, 1934.

MASSACHUSETTS LEGISLATIVE NOTES

S. 63 relates to the petition of Dr. Charles G. Miles, a member of the Senate. The bill is designed to secure to physicians payment of fees for attendance upon an employee and also for attendance on a person injured as a result of the operation of a motor vehicle. Hearing on this bill was conducted on January 23, and it appeared to be the wish of some members of the committee that certain changes in the text of the bill should be made. Senator Miles made a strong appeal for the passage of this bill.

H. 128 which is designed to require the vaccination of children in Private Schools was before the Committee on Public Health January 23. Dr. Chadwick, Commissioner of Public Health, and Dr. Robey, President of the Massachusetts Medical Society, were the principal speakers in favor of this bill. An attorney and a few others objected to the passage of the bill.

There were only about twenty-five persons in attendance at this hearing. Notice was given that a bill will be considered by the committee at a later date, which will represent those who are opposed to compulsory vaccination in any form.

MISCELLANY

THE REPORT OF THE COLLIS P. HUNTINGTON MEMORIAL HOSPITAL

The report of this hospital for the year ending June 30, 1933, together with that of the laboratories of the Cancer Commission of Harvard University, is an interesting and informative publication. Therein one may find in concise form the problems which confront the student of the measures employed in dealing with cancer.

The number of patients for the year is about the same as the average of the past ten years, and this may mean that the resources of this beneficent institution are taxed to their capacity. The list of 302 communications published by the staff covers the complicated problems of the management of this disease.

As is the case with many hospitals, the financial resources for the organization have been inadequate as is shown by a deficit for the year of $26,927.76. This is disconcerting because the study and treatment of cancer constitute major problems before the medical profession and society at large. Such agencies should, even in these times of depression, be generously supported. While it is probable that the campaign for funds now in progress in Boston may supply some relief of the financial burden of the Huntington Hospital, there are so many demands which will have to be considered in the allocation of funds that the solicitors may properly emphasize the needs of this agency for the relief and control of one of the most menacing afflictions of humanity.

EXCERPT FROM THE PRESIDENTIAL ADDRESS BY SIR HENRY BRACKENBURY TO THE SECTION OF PREVENTIVE MEDICINE AT THE CONGRESS OF THE ROYAL SANITARY INSTITUTE AT BLACKPOOL, JUNE, 1933*

First I want to put before you, not as a text but as a reminder, two passages from the Memorandum of Evidence submitted on behalf of the British Medical Association to the Royal Commission on National Health Insurance. The first is this: "The measure of success which has attended the experiment of providing medical benefit under the National Health Insurance Acts system has been sufficient to justify the profession in uniting to ensure the continuance and improvement of an insurance system." The second is this: "The organisation of a National Health Insurance scheme is not necessarily, or even probably, the best means of utilising limited resources for the promotion of national health. It is more than likely that there are a number of other directions in which, severally or collectively, a corresponding expenditure would produce an even more satisfactory return." Those statements were made more than eight years ago. There can be no doubt, however, that contradictory as some may think they appear to be, they are both regarded as true by the great majority of the medical profession today.

*Reported in full in the *British Medical Journal*.

A BRIEF RECORD OF DR. L. S. PILCHER

When a surgical journal becomes fifty years of age, it is interesting. When one editor holds the reins on one journal for that long, it is news.

Fifty Years—Golden Jubilee

Dr. Pilcher—Annals Of Surgery

The quality of uniqueness is not concealed. It is patent and obvious. When Lewis Stephen Pilcher entered the University of Michigan at the age of thirteen and took his bachelor's degree at seventeen, he did the unique thing. He still stands today, at the age of eighty-nine, the youngest matriculant and the youngest graduate of that institution. His master's degree was added within a year; and in that same year he entered upon medical study. This was in 1863 when the Civil War was raging. The next year found him with enough medical knowledge to volunteer as a hospital steward and throw himself into the thick of service to the sick and wounded. This was the beginning of his medical experience—seventy years ago.

Then back to the University of Michigan and the doctor's degree in 1866. Many years later, 1890, this same institution conferred upon him the further honorary degree of Doctor of Laws. Practice began in a rural district of Michigan at the age of twenty; at the same time, to guarantee a livelihood, teaching in the little schoolhouse by the blacksmith shop. He rode his horse across the countryside to the call of the sick, followed the current literature of medicine, and for diversion read the classics in their original Greek and Latin.

However, the details of practice were not enough. Already he had out his lines for wider fields. The next move was to an interneship in a Detroit hospital. Then a postgraduate course in the hospitals of New York City. And then came the successful examination and appointment as Assistant Surgeon in the United States Navy, in 1867. He got experience with practice and with people, and read voraciously. In 1869, yellow fever broke out on the wooden sailing frigate "Saratoga," in Havana harbor. The surgeon of the ship was one of the first to die of the disease. Upon his death, the young Assistant Surgeon Pilcher was sent to the stricken vessel. With her infected crew she started for northern waters. By the time she reached New York and was relieved, thirty-seven cases of the disease had developed, seventeen of whom died. Then Assistant Surgeon Pilcher came down with yellow fever and was removed to the Naval Hospital at Brooklyn. His recovery, and retirement from the Navy, and entrance into private practice, in 1872, followed.

The *Annals of Surgery* was the first surgical journal in the English language. It has been

guided continuously by Dr. Pilcher, who originated this publication in 1885 and has continued as Editor to the present day. It has always reflected its editor's standards of quality. As the official organ of the American Surgical Association, the New York Surgical Society, and the Philadelphia Academy of Surgery, it has profoundly influenced American surgery. It has inspired a high quality not only in surgical journalism but in surgical practice as well. It has for fifty years steadfastly kept the faith as a true monthly review of surgical science and practice. And for this, medicine owes a debt to this one man.

Among the honors conferred upon Dr. Pilcher are President of the New York State Medical Society in 1892 and of the Medical Society of the County of Kings in 1900, Fellow of the American Surgical Association, and its President in 1918; Honorary Fellow of the American College of Surgeons, the Philadelphia Academy of Surgery, the College of Physicians of Philadelphia, the New York Surgical Society, and the Brooklyn Surgical Society, and one time Commander-in-Chief of the Grand Army of the Republic.—*Excerpts from the bulletin, the Annals of Surgery.*

CORRESPONDENCE

A TRIBUTE TO BOSTON AND THE JEWISH RACE

440 Warren Street,
Roxbury, Mass.,
January 24, 1934.

To the Editor:

In the January issue of *Modern Medicine* there is a list of M.D.'s published under the title:

Thirty-three Men Who Made Medical Progress in 1933. The value of the list may be questionable. Nevertheless, it is the result of a questionnaire submitted to 150 deans of medical schools and editors of medical journals, whose judgment and impartiality we have no reason to suspect.

Assuming, then, that these 33 names are entitled to the honor given to them, as men "who made medical progress in 1933," there are two outstanding facts to which I wish to draw your attention:

First, out of these 33 physicians, eight or even nine are Bostonians, which means one-fourth of all mentioned.

Secondly, ten of these, or about one-third, belong to the Jewish race.

Both as a Bostonian by adoption and as a Jew by birth, I am delighted and proud.

Yours truly,
M. J. Konikow, M.D.

THE INCORRECT USE OF "PEDIATRICS"

Worcester, Massachusetts.

Editor, *New England Journal of Medicine:*

How one specialty in medicine doth now tread upon another's heels.

Pediatrics (we used to spell it paediatrics in the early years of the Republic) must now include the care of the child before as well as after birth and incidentally, that of the mother before, during and after the function of bearing, else why is the newly endowed professorship in honor of Dr. W. L. Richardson (an obstetrician if there ever was one) to be called the William Lambert Richardson Professorship of Pediatrics as stated in capital letters on page 163 of your esteemed and sometimes correct *New England Journal of Medicine*? I pause for a reply.

Very sincerely yours,
Samuel B. Woodward, M.D.

January 22, 1934.

Note: The point of our esteemed correspondent is well taken. The word "Obstetrics" should have appeared in the place of "Pediatrics."

HEROIC DOSES OF CALOMEL

Jan. 19, 1934.

Editor, The *New England Journal of Medicine.*

Some years ago I found this report of a case of "croup" (quite possibly diphtheria) in an old day book belonging to my grandfather, Adoniram Smalley, one time president of the New Hampshire Medical Society. I was much interested in it at the time, because of the recorded dosage of calomel in the case, thinking it no wonder that calomel got a "black eye" years ago. I thought I had lost the paper but tonight I ran across it by accident in an old note book of my own and again the thought came to me that the nearly 90 year old report might be of interest to this generation of physicians because of the heroic treatment in all respects as well as the accumulated dosage of calomel, though of course if the poor kid vomited as often as recorded, he undoubtedly got rid of a good deal of the 70 odd grains of calomel administered—it also had a humorous side-light on the ethics of bygone days. As nearly as I can figure it out, it was about 1845 in December that the reported case occurred, and in Lyme, New Hampshire.

The child grew up into a vigorous man and died about 10 years ago.

Respectfully,
F. L. Smalley, M.D.

Reading, Massachusetts.

"Payson Fairfield was attacked December 9th, Friday Evening with croup, the parents having never seen a case thought it a bad cold and nursed him till 3 o'clock P.M., Saturday when his breathing became so laborious that they became alarmed, and I was called in. I found him labouring under much difficulty of breathing, and an urgent cough which gave the distinct stridulous crowing sound; so with each inspiration I gave him an emetic of Tart. Ant., which vomited him some fifteen times and kept him nauseated till 1 o'clock in the eve-

ning at which time I found his breathing somewhat relieved. I then left him seven 3 gr. doses of Calomel with directions to give them once in 2 hours or oftener if the breathing became worse. Saw him again Sabbath morning. He had taken all the Calomel and had but one slight evacuation from the bowels; his breathing was easy but when he coughed the same croupy sound accompanied it. I then gave him 10 grs. Calomel which moved once in two hours. At eleven o'clock A.M. his breathing became more difficult. At 3 o'clock P.M. his breathing became extremely difficult, the head thrown back, the lips purple and every appearance of approaching suffocation. I directed sponges wrung out of hot water and applied to the trachea and the heat increased till it was difficult to apply them in consequence of the pain it produced to the hand because the heat was so great; during this time the snuff plaster was kept on the superior part of the chest, and he was taking once an hour a powder of Cal. 1 gr., Ipecac 2 gr., Jones Powder 1 gr. and once in two or three hours he had the hot vapor bath by throwing a flannel blanket over his head. I followed this course till 4 o'clock Monday morning when the sponges were laid aside and the snuff or tobacco was applied to the Trachea. At this time the breathing became somewhat relieved so much so that he had short intervals of breathing without the croupy sound with his inspirations. At 10 o'clock expecting a recurrence of aggravated symptoms for the afternoon and evening I suggested the propriety of having counsel when at 2 o'clock Drs. Hamilton and Dickey were called in, and after an examination of the case, we retired to a separate room for private consultation, and after a few remarks my able councilors got into a personal altercation and conferred all their bitter drugs upon each other and left my poor suffering patient to the care of good nursing and my feeble ability. After their ire had been expended in invectives on each other they finally condescended to advise to the addition of 1/6 gr. opii to the powder which I was giving and left. They had so far departed from the rules of good order that I did not feel myself bound to heed their advice. Consequently I continued my course of treatment, advised the powders of Cal. Ipecac and the use of snuff together with the hot vapour bath. When about midnight my little patient began to improve in breathing, he expectorated a white shining fluid which resembled fibrin. He had vomited at every powder he had taken. Tuesday morning at 7 o'clock he appeared much relieved. I then ordered the powders given once in four hours and as often a half teaspoonful of syrup of Squill. He continued to expectorate throughout the day and night. His sputum was thrown up, not by cough, but by a peculiar contraction of the muscles of the larynx and glottis, something like the gagging accompanying the introduction of the finger into the throat. Tuesday evening found him sleeping quietly without any of the croupy sound accompanying his inspirations, continued the Squill Syrup through the night, gave him Ol. Ricini, etc. Wednesday morning found him almost entirely relieved except some cough which he had been troubled with since he had Pertussis in July & August."

RECENT DEATHS

O'BRIEN—Carl Robert O'Brien, M.D., of Bangor, Maine, a member of the Massachusetts Medical Society, died January 9, 1934. Dr. O'Brien was born in Boston, Massachusetts. He graduated in medicine from the Tufts College Medical School, and was especially devoted to the study of diseases of the heart and lungs.

He was prominent in local and state affairs. During the World War he served as captain in the Medical Corps. He is survived by his widow, two sisters, who are living in Cambridge, Massachusetts, and a nephew, of New York City.

ROTHFUCHS — Charles Christian Rothfuchs, M.D., of 20 March Avenue, West Roxbury, Mass., died January 24, 1934. He was born in Boston in 1873 and graduated in Medicine from the Harvard Medical School in 1896. He held membership in the Massachusetts Medical Society from 1898 until 1905.

He was active in Masonry.

He is survived by his widow and three sons.

OBITUARY

EUGENE ABRAHAM DARLING, A.B., M.D., F.A.C.S.
April 17, 1868—January 9, 1934

In the sudden death of Eugene A. Darling, Cambridge lost one of its most useful citizens. Coming to Harvard College in the eighties, he stayed in Cambridge and aided in the development of that City during the last forty years. He was fortunate in being able to lead a full, happy and useful life up to the very end. He brought up a fine family and saw them all happily established, with children of their own, and he died suddenly in the evening after making a professional call.

Dr. Darling was the son of Henry H. and Caroline Cady (Martin) Darling and was born in Troy, New York, on April 17, 1868. After graduating from the Troy High School, he came to Harvard College, joining the Class of 1890. With this class he has been closely associated and at the time of his death was Class Treasurer.

His medical education was received at the Harvard Medical School and in the Edinburgh University, Scotland.

On February 17, 1892, Dr. Darling married Albenia Merrill, of Cambridge.

In 1894, shortly after he began practice in Cambridge, he became an Assistant Professor of Bacteriology in the Harvard Medical School, teaching that subject for five years. In 1899, he joined the Department of Physiology and Hygiene in the College. In this Department he held an Assistant Professorship

from 1908 to 1913. Many graduates of Harvard College remember his interesting lectures on physiology.

From 1897 to the time of his death, he served the Cambridge Hospital. His first appointment was that of Physician to Out-patients in 1897. In 1900 he became Visiting Physician. After his service as Major in the United States Army Medical Corps during the World War, with that surgical experience, he returned to the Cambridge Hospital as Visiting Surgeon. The Superintendent of the Hospital says that for many years he was one of her best teachers of nurses.

Dr. Darling was one of the organizers of the Cambridge Tuberculosis and Health Association and served as its President from 1904 to 1925. During those years of his leadership, he had the pleasure of watching this Association grow until it occupied the position of one of the most important health organizations in the City.

His medical affiliations were with the Massachusetts Medical Society, The American Medical Association, The National Association for the Study and Prevention of Tuberculosis, The Association of American Pathologists and Bacteriologists, The American Association for the Advancement of Science and the Cambridge Medical Improvement Society. He was a Fellow of the American College of Surgeons.

He was also a member of the Harvard Club of Boston, The Faculty Club, The Economy Club, The Cambridge Club, the Oakley Country Club and the Wyman Club, whose membership is made up of many of the leading physicians of Cambridge. This Club Dr. Darling himself founded.

Dr. Darling is survived by his widow, four children and eight grandchildren. The children are Mrs. Maurice E. Day of Damariscotta, Maine, Mrs. Donald Holbrook of Newton, E. Merrill Darling of Wellesley, and Robert M. Darling of Kingston.

The above list of activities indicates Dr. Darling's breadth of interest and his devotion to teaching. His chief characteristics were thoroughness, devotion to his friends and real love of the practice of medicine. When an important discovery appeared upon the medical horizon, such as bacteriology, he was one of the first of the Cambridge physicians to study and understand it thoroughly. When a colleague was sick he was eager to aid and always he was devoted to his patients. He had in his practice a large following of Cambridge people who already find that they miss him deeply. Surely this is the story of a well-rounded and useful life.

H. F. D.

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MASSACHUSETTS GENERAL HOSPITAL

Invitations have been issued by the Trustees of the Massachusetts General Hospital for the graduation exercises of the Training School for Nurses to be held Friday evening, February 9, at 8:30 o'clock in the Moseley Memorial Building on Fruit Street.

An address will be given by Hans Zinsser, M.D., S.D., Professor of Bacteriology and Immunology, Harvard Medical School.

A reception will be held from 9:30 to 11:00 P.M.

LAWRENCE CANCER CLINIC

Lawrence, Massachusetts,
January 25, 1934.

To the Physicians of the North Half of Essex County:

The regular Lawrence Cancer Clinic, to be held at Lawrence General Hospital, 1 Garden Street, Lawrence, upon Tuesday, February 6, at 10 A.M., will be a Demonstration Clinic with Channing C. Simmons, M.D., of Boston, Associate in Surgery at Harvard University Medical School, Acting Surgeon-in-Chief to Collis P. Huntington Memorial Hospital, Boston, and Member of Cancer Commission of Harvard University, present as consultant. You are invited to accompany any of your patients whom you desire shall have this service, or to send them with a note, and a report will be returned to you. This service is gratis. Your attendance at the Clinic is always welcome.

Committee
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CHAS. J. BURGESS, M.D.,
FRED'K D. MCALLISTER, M.D.,
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FEBRUARY-MARCH, 1934

Sponsorship: Public Education Committee of the Massachusetts Medical Society and Massachusetts Department of Public Health.

Courtesy WBZ. Fridays, 4:30 P.M.

February

2 What a Parent Should Know About Measles
9 Milk
16 Stomach Trouble
23 Lumps in the Neck

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2 Age and Cancer
9 Some Problems of Epilepsy
16 Fractures
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30 Résumé of the Year's Work

HEALTH QUESTION BOX

Sponsored by Massachusetts Department of Public Health. Fridays 4:40 P.M.

RADIO HEALTH FORUM

Queries from the public are answered under the sponsorship of the Department of Public Health.

Courtesy WEEI. Fridays, 5:00 P.M.

Questions on Health and Prevention of Disease may be sent to: Radio Health Forum, State Department of Public Health, State House, Boston.

SPECIAL

From Friday, January 19, the State House Broadcasts were discontinued and in their place were substituted Ten Minute Health Reviews.

Sponsored by the Massachusetts Department of Public Health. Assisted by Miss Violette Babcock, Violinist, and Mr. G. Lambert Roscoe, Pianist and Organist.

Courtesy WEEI. Fridays, 1:15 P.M.

Glimpses into the History of Public Health in Massachusetts together with the Functions and Activities of the Massachusetts Department of Public Health, Blended with Classical Music.

After hearing this new program we would appreciate your comments.

REPORTS AND NOTICES OF MEETINGS

THE GREATER BOSTON MEDICAL SOCIETY

The Greater Boston Medical Society met in the amphitheatre of the Beth Israel Hospital on Tuesday evening, January 9, 1934, at 8:15 P.M. Dr. Maurice E. Barron was chairman of the meeting.

Dr. Max Balin, the appointed speaker of the evening, was unable to attend due to illness and instead Dr. Joseph C. Aub, physician-in-chief at the Huntington Memorial Hospital, spoke on "Malnutrition." Problems arise in both diagnosis and treatment of malnutrition. Dr. Aub pointed out that we have no accurate yardstick to differentiate the normal and the slightly undernourished patient.

The causes of malnutrition are various. Besides the group secondary to carcinoma, chronic infection, and gastro-intestinal disease, there is a large group of cases classed as "constitutional thinness." These are largely due to poor food habits acquired in childhood and for which overzealous parents are usually responsible. Doctors are sometimes at fault in that various articles are excluded from the diet successively by different physicians until the patient is on a totally inadequate food intake. Some patients simply lack interest in food. Unlike the European, the average American has apparently lost the "art of eating."

An interesting group of cases of malnutrition is that due to abnormalities in the glands of internal secretion. Patients appear undernourished in cases of hyperthyroidism, whether masked or obvious. Malnutrition is a marked feature of Addison's disease and is here due to both asthenia and the inability of the gastro-intestinal tract to handle food properly. Undersecretion of the pituitary is another cause of undernourishment. Hypophysectomized rats not only cease to grow but show a remarkable loss of appetite as well. In Simmond's Disease there is atrophy of the pituitary from cysts, tumors, or other conditions. The syndrome includes early senility associated with a low blood sugar. One case has been reported secondary to pinealoma, but, as a rule, the condition can be shown to be associated with pathological changes within the pituitary body. It is practically impossible to make these patients gain weight. Some lesions of the midbrain itself often lead to loss of weight, a fact which may explain the malnutrition found with encephalitis.

A primary case of malnutrition is lack of hunger, a subjective experience depending upon forcible contractions on the part of the empty stomach. That the contractions of the stomach are readily influenced by such states as worry, anxiety, anger, etc., has been adequately demonstrated. Gastric peristalsis is also impaired by violent exercise. After severe exertion, contractions of the stomach are lost for nearly two hours. Hence the inadvisability of severe exercise before meals.

After a consideration of the effects of low food intake on the general metabolism, Dr. Aub discussed the treatment of malnutrition. An important obstacle to overcome is the patient's psychological resistance. No more than three meals a day are to be advised since in this way it is hoped that the patient's' stomach will become "educated" to large meals. Bulky food of low caloric content is contraindicated. It is advisable to give food which can be expected to leave the stomach quickly so that the patient will be satisfied by the meal for as short a time as possible.

Many patients will complain of indigestion of one food or another. The administration of tachydiastase has proved beneficial in the relief of carbohydrate indigestion. Indigestion of fatty food often complained of by patients is frequently unfounded. The psychological barrier may be broken by the administration of fats in disguised form. Patients on a low calcium diet usually show a marked loss of appetite. The condition is relieved by the administration of calcium conveniently given in the form of milk. Vitamins are apparently important for a good appetite, especially vitamins B and G. Cowgill has shown that the vitamin requirement rises with increased caloric intake.

Dr. Aub then discussed experiments on increasing the peristaltic activity of the stomach by the production of a low blood sugar. Carlson and Bulatao

showed that hypoglycemia after insulin injection led to increased peristalsis in the stomach. There is evidence that the effect may be both from direct action on the stomach and from indirect action through the central nervous system. Insulin, then, may be of some value in improving the appetite. It has been suggested that one may increase his own insulin production by a small carbohydrate meal two hours before the regular meal, but this would defeat the purpose of the three-meal plan. Alcohol at meals is theoretically worthless but may be of value psychologically. Smoking is to be discontinued if one desires to gain weight. Water should be taken freely at mealtime because it favors early emptying of the stomach.

In conclusion Dr. Aub pointed out that the best diet is a well-rounded one. People who begin to limit foods from their diets are almost certain to get into difficulty. All emotional strain and fatigue should be eliminated in order to ensure a properly functioning gastro-intestinal tract.

After an interesting discussion, the meeting was adjourned.

THE BOSTON SURGICAL SOCIETY

The Boston Surgical Society met in the amphitheater of the Massachusetts General Hospital on Monday morning, January 8, 1934, at 9 A.M. The meeting opened with a presentation of surgical cases by Dr. Arthur W. Allen and Dr. Edward D. Churchill.. The first case was that of a young woman who had entered the hospital with signs of an appendiceal abscess and a history of diarrhea. The abscess was drained in the usual manner but the patient failed to show the expected improvement. At a second operation the terminal ileum was found to be diseased and was therefore resected. The case proved to be one of "terminal ileitis". Convalescence was complicated by digestion of the skin at the site of the wound, but the patient is now doing well.

The case of a sixteen year old boy was presented who has been in the hospital for some months with repeated attacks of intestinal obstruction, lately of a high type. The patient is known to have had tuberculous peritonitis and calcified mesenteric glands are demonstrable by x-ray. His present entry to the hospital followed an attack of peritonitis which was shown to be of appendiceal origin (B. coli were cultured from the peritoneal exudate at the time of operation). Subsequently he has had repeated attacks of intestinal obstruction, mechanical in type and relieved by enterostomies. With his last attack, Dr. Churchill elected to free the obstruction at the time of laparotomy and to close the abdomen without enterostomy. The patient is now having a satisfactory convalescence, a few days postoperatively.

Dr. Allen presented a 26 year old Portuguese workman who had been operated upon at another hospital for a gangrenous appendix four months before entry. His convalescence at that time was marked by a septic temperature for three months. He then went home and failing to improve in the next four weeks he entered the Massachusetts General Hospital. At entry he showed obvious signs of sepsis and a mass was felt in the left lobe of the liver from which pus was aspirated. It was marsupialized and forty-eight hours later was drained. At the time of presentation pus had ceased draining from the wound and bile was draining instead.

Dr. Churchill presented the case of a young married woman who developed a symbiotic ulcer of the left anterior chest wall following the drainage of multiple breast abscesses on that side. The large ulcerated area has persisted in spite of vigorous treatment for nearly two years. Excision (including cautery) of the advancing undermined edge has been attempted repeatedly. Transfusions have been given. Sinuses and pus pockets developed in the chest wall and these were drained by rib resection almost exposing the pericardium. Various antiseptics have been tried including a suspension of peroxide of zinc without any marked success. Skin grafts in the relatively clean areas have been promising, but suppuration especially around the advancing edges continues to be a problem.

Among other cases presented was that of a young girl with infected herpetic lesions of the upper lip producing visible venous thrombosis of branches of the facial vein extending toward the inner canthus of the left eye and associated with marked chemosis and swelling of the face on that side down to and including some of the neck. The case was complicated by a metastatic soft tissue abscess at the right ankle from which pus was aspirated and Staphylococcus aureus cultured. The blood culture was positive for the same organism. Ligation of the angular vein was not deemed advisable and the case was treated locally, supportively, with blood transfusion, and with non-specific protein therapy ("Aolan"). The patient was having a satisfactory convalescence.

The remainder of the meeting was devoted to the discussion of various topics of interest by members of the staff at the Massachusetts General Hospital. Dr. Fletcher Colby spoke on "Kidney Lesions in Parathyroid Disease." He emphasized the fact that renal calculus is a symptom of disease rather than a disease entity. Bladder stones are usually due to obstruction and infection. Cystine stones in the kidney are known to be due to a derangement in sulphur metabolism. Derangement of the metabolism of calcium and phosphorus may similarly lead to lithiasis. Calcification in the urinary tract has most commonly occurred in the kidney, with calcification of the renal parenchyma in two cases, with hyperparathyroidism. As a rule these patients do not show bone changes because they are usually on a high calcium diet. The frequency with which renal stones have been shown to be associated with hyperparathyroidism has led to the opinion that blood calcium and phosphorus studies should be done

routinely in all cases with calcification within the urinary tract.

Dr. George Holmes next spoke on "Bone Lesions in Parathyroid Disease." He pointed out that the disease picture is one coming under the general heading of osteomalacia and by means of x-ray films demonstrated the differences between parathyroid disease and other members of the group. The most striking changes are in the skull, where the calvarium is thickened and granular in appearance, the tables are poorly or not at all defined, and there are very characteristic changes about the teeth with a disappearance of the dense white shadow surrounding the root. The remainder of the bones show generalized decalcification with cyst formation or a suggestion of it, though this is not at all an essential part of the picture. Cysts in giant-cell tumors are always in the cancellous portion of bone; in parathyroid disease, the cysts occur anywhere in the bone and are usually multiple. Dr. Holmes carefully differentiated the condition from Paget's Disease, multiple myeloma, and another form of osteitis fibrosa cystica not due to hyperparathyroidism and affecting usually only one group of bones.

Dr. E. D. Churchill briefly discussed "Surgery of the Parathyroids." In tumors of these glands we are still unable to say whether we are dealing with true tumors or mere hyperplasia. After excision, the tumor should be confirmed histologically by frozen section. General anesthesia is preferable especially if the operation is to be long drawn out. He mentioned the various places in which the tumors may be found and emphasized the point that palpation is of no value in locating the lesion. Hemostasis and preservation of the recurrent laryngeal nerves are important features of the operation. In cases of large or multiple parathyroid tumors, partial excision followed later by removal of the remainder at a second operation is recommended especially if there is marked decalcification of the bones.

Dr. Arthur W. Allen presented the results of his recent study of cases of massive hemorrhage from peptic ulcer. He found that about one-third of the cases of duodenal ulcer at the Massachusetts General Hospital have bled. Fifteen per cent of the cases have bled massively and three per cent have died from the hemorrhage. All fatal cases had bled before. The average duration of life after bleeding has been sixteen days. Fatal hemorrhage is uncommon in youth and increases with age till it becomes 50 per cent at the age of seventy. The old patient should therefore be operated upon immediately and not be allowed to wait. The operative technic was described.

Dr. E. L. Young, Jr., spoke on some observations on immunity in the peritoneal cavity. He has been able to secure a sterile peritonitis by the injection of amniotic concentrate, the height of the reaction coming four to six hours after the injection. This has been done preoperatively in a small series of cases of large bowel surgery and an astonishing reduction in mortality from peritonitis has followed. The results warrant a continuance of the procedure.

Drs. H. H. Bradshaw and W. F. Hoyt demonstrated the apparatus used in the intratracheal method of anesthesia and in the rebreathing-CO_2-absorption method. The advantages of these methods in the administration of volatile anesthetics were discussed. They are being used more and more at the Massachusetts General Hospital.

The next speaker was Dr. Tracy Putnam who discussed "Myelotomy Commissurae — New Treatment for Pain in the Upper Extremity." Dorsal root section has long been advocated for the relief of intractable pain but the resulting ataxia forbids its use in the extremities. Cordotomy, in which the spino-thalamic tracts are cut, has proved efficient for pain in the lower segments. The pain level has been found to rise gradually after the operation, however, and the operation has been discouraged for the treatment of pain in the upper extremity since the section would have to be at a level in dangerous proximity to the respiratory fibers. The ideal situation for the relief of pain would be the establishment of a syringomyelia-like condition. Dr. Putnam has attempted to do this by section of the commissural fibers in five cases with success in some of them.

The program concluded with the demonstration of two new instruments by Drs. E. W. Benedict and J. V. Meigs. The former demonstrated the flexible gastroscope and the latter the colposcope which together with the use of Lugol's solution on the cervix uteri has proved to be of great value in the detection of early lesions of that organ.

HARVARD MEDICAL SOCIETY

The next meeting of the Harvard Medical Society will be held in the Peter Bent Brigham Hospital Amphitheatre (Van Dyke Street entrance), Tuesday evening, February 13, at 8:15 o'clock.

PROGRAM

Presentation of Cases. Dr. C. F. McKhann.

The Mechanism of Salt Deficit in Chronic Nephritis. By Dr. A. M. Butler.

The Specific Treatment of Influenzal Meningitis. By Dr. L. D. Fothergill.

Some Experiments in Iron Metabolism. By Dr. L. K. Diamond.

JOHN HOMANS, M.D., *Secretary.*

HOUSE OFFICERS ASSOCIATION OF THE BOSTON CITY HOSPITAL

MONDAY, FEBRUARY 12, 1934

Subject: Endocrinology.

8:00 P.M. Presentation of Cases.

8:15 P.M. Dr. Fuller Albright, "A Discussion of the Measuring Sticks Now Available in the Diagnosis, Treatment and Study of Ovarian Disorders."

8:35 P.M. Dr. Allan Winter Rowe, "Some Abnormalities of Growth and Development."

8:55 P.M. Dr. Robert C. Cochrane, "Surgical Consideration."

9:15 P.M. Dr. Joseph C. Aub, "The Pituitary Glands."

9:35 P.M. Discussion.

This meting will be held in the Cheever Amphitheatre of the Boston City Hospital.

ROBERT T. PHILLIPS, M.D., *Secretary.*

SOCIETY MEETINGS, CONGRESSES AND CONFERENCES

February 1—Faulkner Hospital Clinical Meeting, Thursday at 5:00 P.M.

February 1—New England Hospital for Women and Children. Meeting will be held at 7:30 P.M.

COURSE ON MEDICAL BIBLIOGRAPHY
Boston Medical Library
1934

February 6—The Making of Medical Books. Dr. Henry Viets.

February 13—Incunabula. James F. Ballard.

Tuesdays at 8 P.M.

Boston Medical Library, 8 The Fenway.

February 6—Lawrence Cancer Clinic. See page 281.

February 7—Annual dinner of the Tufts College Medical School Alumni Association at the Boston City Club, 6:30 P.M.

February 9—William Harvey Society at the Beth Israel Hospital, at 8 P.M. Speaker: Dr. George Blumer, Yale Medical School. Subject: "Bedside Diagnosis."

February 12—House Officers' Association of the Boston City Hospital. See page 284.

February 13—Harvard Medical Society. See page 284.

February 14—New England Dermatological Society will meet at 3 P.M. at the Massachusetts General Hospital.

February 14—Greater Boston Medical Society will meet at the Beth Israel Hospital, Boston, from 8 A.M. to 4:30 P.M.

February 16 and 17—The New England Hospital Association is holding its Twelfth Annual Meeting at the University Club, Boston. For details write Dr. A. G. Engelbach, Massachusetts General Hospital, Boston.

March 5, 6 and 7—The Southeastern Surgical Congress will be held at Nashville, Tenn. For information write Dr. B. T. Beasley, 1019 Doctors Building, Atlanta.

March 9—William Harvey Society at Beth Israel Hospital. Speaker: Dr. Irving J. Walker, Clinical Professor of Surgery, Harvard Medical School. Subject: "Judgment and Conscience in Surgery."

March 12—House Officers' Association, Boston City Hospital, 8:00 P.M. Speakers: Drs. A. Warren Stearns, Abraham Myerson. Subject: Forensic Psychiatry.

April 16-20—The American College of Physicians will hold its Eighteenth Annual Clinical Session in Chicago at the Palmer House. For information write Mr. E. R. Loveland, Executive Secretary, 133-135 South 36th Street, Philadelphia, Pa.

April 30—The American Board of Dermatology and Syphilology. Examinations for Certificates. Address: Dr. C. Guy Lane, 416 Marlboro Street, Boston, for details.

July 24-31—The IVth International Congress of Radiology will be held in Zurich under the presidency of Professor H. R. Schniz. General Secretary Dr. H. E. Walther, Gloriastrasse 14, Zurich.

September 3-6—American Public Health Association, at Pasadena, California. Dr. J. D. Dunshee, Chairman, Local Committee on Arrangements.

September 4, 5, 6—International Union Against Tuberculosis will be held in Warsaw. For particulars address The National Tuberculosis Association, 450 Seventh Avenue, New York, N. Y.

DISTRICT MEDICAL SOCIETIES

ESSEX SOUTH DISTRICT MEDICAL SOCIETY

February 7—Council Meeting, Boston.

Wednesday, March 7—Lynn Hospital. Clinic 5 P.M. Dinner 7 P.M. Speaker: Dr. Frank H. Lahey, Boston. Subject to be announced. Film Electrocardiogram.

Wednesday, April 4—Essex Sanatorium, Middleton. Clinic 5 P.M. Dinner 7 P.M. Speakers: Dr. Elliott P. Joslin and Dr. Howard F. Root, Boston. Subject: "Tuberculosis Complicating Diabetes."

Thursday, May 3—Censors' Meeting, at Salem Hospital, 3:30 P.M.

Tuesday, May 8—Annual Meeting. Salem Country Club, Forrest Street, Peabody. Dinner at 7. Speaker to be announced. Subject to be announced.

RALPH E. STONE, M.D., Secretary.
221 Cabot Street, Beverly, Mass.

FRANKLIN DISTRICT MEDICAL SOCIETY

Meetings will be held on the second Tuesday of March and May at the Weldon Hotel, Greenfield, at 11 A.M.

CHARLES MOLINE, M.D., Secretary.
Sunderland, Mass.

MIDDLESEX EAST DISTRICT MEDICAL SOCIETY

Meetings will take place in March (2nd Wednesday) at Wakefield, and May (2nd Wednesday) at Winchester.

ALLAN R. CUNNINGHAM, M.D., Secretary.
76 Church Street, Winchester, Mass.

MIDDLESEX NORTH DISTRICT MEDICAL SOCIETY

Meetings will be held on January 31, and April 25.

T. A. STAMAS, M.D., Secretary.
226 Central Street, Lowell, Mass.

MIDDLESEX SOUTH DISTRICT MEDICAL SOCIETY

February 20—Meeting at the Metropolitan State Hospital, Waltham, 5 P.M.

NORFOLK DISTRICT MEDICAL SOCIETY

February 27—Hotel Kenmore, 8:30 P.M. Dr. J. H. Shortell: "Industrial Medicine and Surgery."

March 27—Faulkner Hospital, 8:30 P.M. Dr. Henry H. Faxon and Dr. Edward A. Edwards: Symposium on "Varicose Veins." Discussion by Dr. E. E. O'Neil.

April 17—Hotel Kenmore, 8:30 P.M. Special Business Meeting.

May—Annual Meeting. Time, place and program to be announced.

FRANK S. CRUICKSHANK, M.D., Secretary.
1695 Beacon Street, Brookline, Mass.

NORFOLK SOUTH DISTRICT MEDICAL SOCIETY

February 1—12 noon at Norfolk County Hospital. Stated Meeting. Speaker: Dr. Sara Jordan. Subject: Stomach Ulcers.

March 1—12 noon at Quincy City Hospital. Program by the hospital staff.

April 5—12 noon at Norfolk County Hospital. Speaker: Dr. Elliott P. Joslin. Subject: Diabetes.

May 3—12 noon at Norfolk County Hospital. Annual Meeting. Election of Officers.

N. R. PILLSBURY, M.D., Secretary.
Norfolk County Hospital, South Braintree, Mass.

SUFFOLK DISTRICT MEDICAL SOCIETY

March 28—Clinical Meeting at the Massachusetts Memorial Hospitals.

April 25—Annual Meeting at the Boston Medical Library. Election of Officers. Scientific Program, titles and speakers to be announced.

The Medical Profession is cordially invited to attend all of these meetings.

JAMES H. MEANS, M.D., Vice-President.
GEORGE P. REYNOLDS, M.D., Secretary,
311 Beacon Street, Boston, Mass.

WORCESTER DISTRICT MEDICAL SOCIETY

All meetings to be held on Wednesdays as follows:

February 14—Dinner and scientific program at the Worcester State Hospital, Worcester, Mass.

March 14—Dinner and scientific program at the Memorial Hospital, Worcester, Mass.

April 11—Open date.

May 9—Annual Meeting. Time and place to be announced later.

ERWIN C. MILLER, M.D., Secretary.
27 Elm Street, Worcester, Mass.

BOOK REVIEWS

Histoire des Universites Françaises et Étrangères des Origines a Nos Jours. By STEPHEN D'IRSAY. Tome 1, Moyen Age et Renaissance. Paris: Auguste Picard, 1933. xii + 372 Pages.

This book is a very valuable contribution to the history of both science and medicine. The first volume only has been issued, covering the period from the Middle Ages to the Renaissance. Dr. D'Irsay takes up in separate chapters each of the universities founded during this period and, in addition, presents valuable comments upon the general growth of knowledge as reflected in the foundations of the university chairs. Carefully documented and with superb illustrations, this book is sure to be one of the great contributions to the subject. One looks forward to the publication of the future volumes.

Light Therapy. By FRANK H. KRUSEN. Published by Paul B. Hoeber. New York. 186 Pages. Price $3.50.

This volume is essentially a summary of the recent literature on light therapy condensed into a compact and readable form. The author has done an excellent piece of work in collecting and correlating a wealth of material. Practically every statement made is supported by a reference to its source as indicated by a number referring to the bibliography at the end of the book.

There are twenty-one chapters covering the physics, physiology, technic, and indications for ultraviolet and infra-red light therapy.

Special chapters are devoted to the more important special fields.

The arrangement of these chapters is unique. The author first gives a list of the conditions for which light therapy has been recommended together with the references. He then summarizes and evaluates. His position is conservative and he is careful to distinguish between conditions in which the indications for its use are not warranted or "not proven".

Thus contrary to the general opinion, dermatologists excepted, we find that ultraviolet therapy is of comparatively little value in the treatment of skin condition, lupus vulgaris and erysipelas excepted. Its value in the prevention of colds is "not proven". It is definitely indicated in all forms of extrapulmonary tuberculosis and in certain selected cases of pulmonary tuberculosis. It is a useful adjunct in the treatment of anemia, and in calcium deficiencies associated with pregnancy.

There are few drugs which have a larger field of usefulness. "On the other hand, no thoughtful individual could possibly feel that ultraviolet rays are of value in the enormous number of conditions for which they have been recommended."

Infra-red is especially indicated in nephritis, arthritis, certain neurologic conditions, fractures, sprains, etc.

The author emphasizes the fact that heat radiations from so-called "infra-red generators" has no appreciable penetration, and their value is chiefly as a surface counterirritant. Where greater depth penetration is desired, "luminous heat" from the 500 to 1500 watt electric bulb is to be preferred.

This book will be of especial value to the general practitioner who should know the facts of light therapy in contradistinction to the claims put forth by the manufacturers of equipment. Our profession could use more handbooks of this type.

The Operative Story of Cleft Palate. By GEORGE MORRIS DORRANCE. Assisted by ENAYAT SHIRAZY. Published by W. B. Saunders Company. Philadelphia and London. 564 Pages. Price $6.50.

This book approaches the subject in a unique and, in many respects, interesting manner because its various chapters bring out a wealth of historical data on the numerous operative procedures of cleft palate over a period of years.

This historical approach of the subject has been handled expeditiously by judicious grouping of different operative procedures under a definite classification.

In his description of various methods of operations the author seldom injects his views but makes careful records of many writers on the subject with "great care to obtain historical accuracy". Later, however, in his chapter on "Conclusions" (Chapter XXIII) he summarizes the entire subject and freely expresses his opinions.

One of the most interesting points brought out in this book, which should receive careful attention by workers in this field of surgery, is the author's contention that in order to place the soft palate in normal or in an approximately normal position so that the resultant velopharyngeal closure will adequately shut off the nasopharynx and enable the patient to speak distinctly, it is necessary, not only to bring the two edges of the cleft together but also to "push back" the entire part of the tissues so as to obtain a long palate. Having this as his object, he advocates what he calls "push back operation" which is usually performed in two stages, and he gives a detailed description of this operation with excellent diagrams.

The chapters on anatomy and physiology of normal as well as split palates are very complete and bring out many instructive points. There are interesting tables of statistics showing the frequency of different varieties of cleft palates as compiled by various writers. The book also contains mortality tables showing the number of deaths from cleft palate operations at various ages. Eighty-seven pages are given to bibliography alone which is ample indication of the care and labor which went into the preparation of the book.

The author should be complimented for his accomplishment as this is one of the most carefully written books published in recent years.